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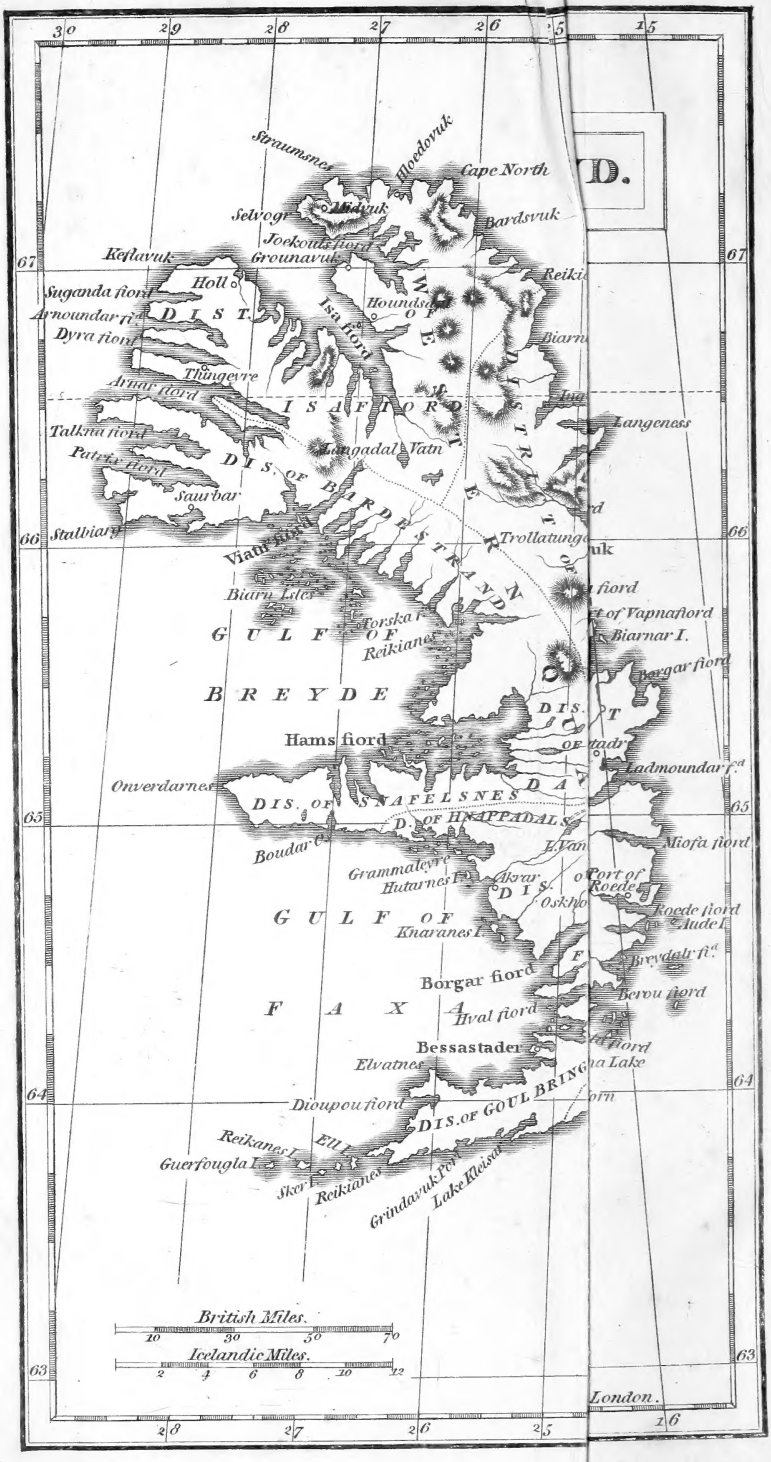

Straumsnes
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Joekouls fiord
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DIS. OF BARDESTRAND
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Stalbiarg
Viatn fiord
Trollatunga
Biarn Isles
Torska f.
GULF OF
Reikianes
Biarnar I.
Borgar fiord
BREYDE
DIS. OF
Hams fiord
Ladmoundar fᵈ
Onverdarnes
DIS. OF SNAFELSNES
D. OF HNAPPADALS
Boudar Os
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Grammaleyre
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DIS. OF
Port of Roede
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Knaranes I.
Breydalr fiᵈ
Borgar fiord
Berou fiord
FAXA
Hval fiord
Bessastader
Elvatnes
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Reikanes I.
Ell I.
Guerfougla I.
Sker I.
Reikianes
Grindavuk Port
Lake Kleisar
British Miles.
10 30 50 70
Icelandic Miles.
2 4 6 8 10 12
London.

TRAVELS

IN

ICELAND:

PERFORMED

BY ORDER OF HIS DANISH MAJESTY.

CONTAINING

OBSERVATIONS ON THE MANNERS AND CUSTOMS OF THE INHABITANTS, A DESCRIPTION OF THE LAKES, RIVERS, GLACIERS, HOT-SPRINGS, AND VOLCANOES; OF THE VARIOUS KINDS OF EARTHS, STONES, FOSSILS, AND PETRIFACTIONS; AS WELL AS OF THE ANIMALS, INSECTS, FISHES, &c.

BY

Messrs. OLAFSEN & POVELSEN.

TRANSLATED FROM THE DANISH.

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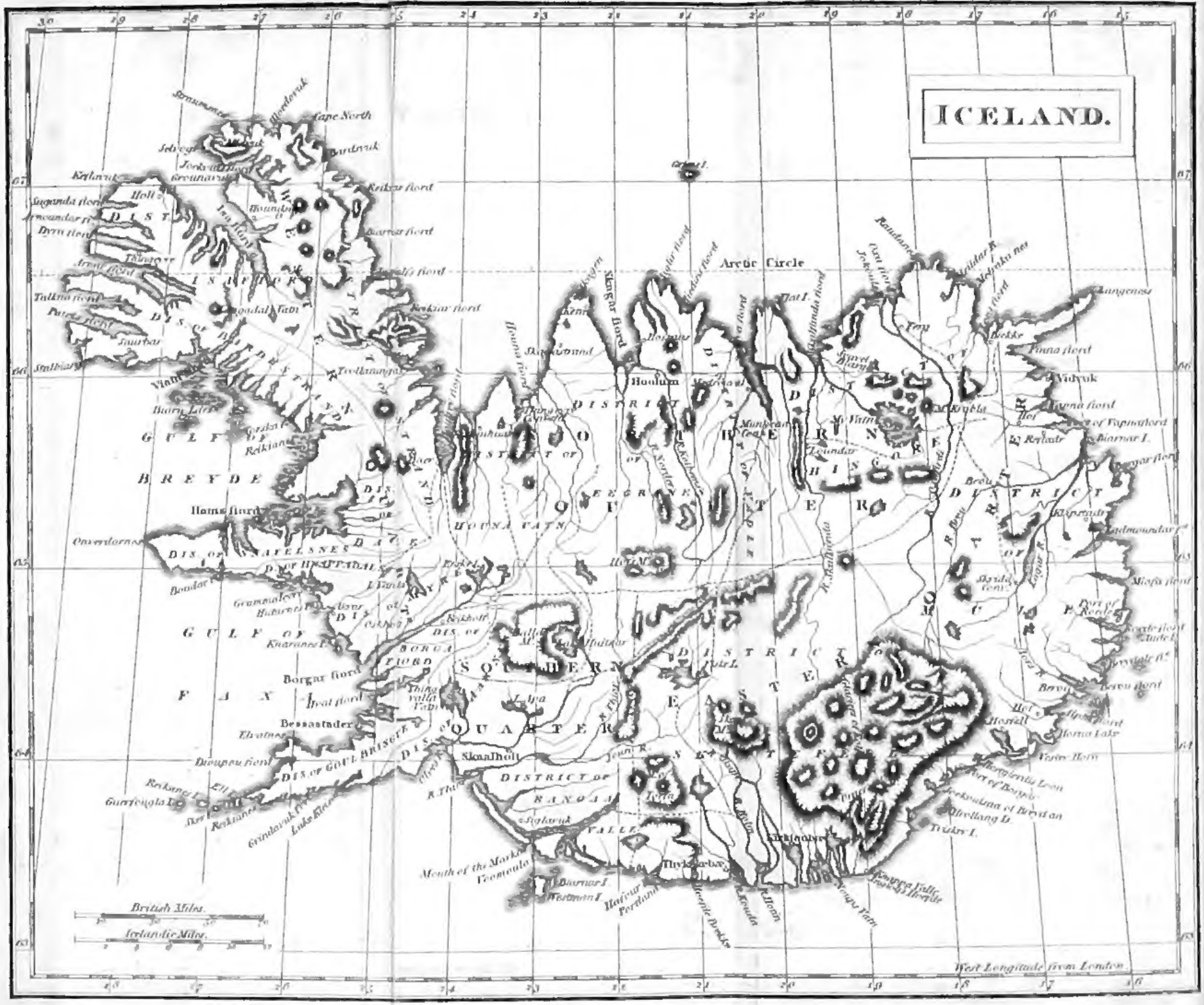
ICELAND.
Arctic Circle
Cape North
Reikiavik
Hoolum
Hafnar fiord
Borgar fiord
Bessastader
Skalholt
Thingvalla
Oxarfiord
Husavik
Vidyuk
Eyiafiord
Akureyri
Grimsey
Hrisey
Flatey
Breyde Fiord
Berufiord
Faxa Bay
Breyde Island
Grimsey Island
Hrisey Island
Flatey Island
Vatna Jokul
Hecla
Mount Hecla
Skaptar Jokul
Kotlugia
Oraefa Jokul
Snefell
Eyiafiord Mountains
Mount Trolladyngia
Mount Skialdbreid
Mount Ingolfshofde
Mount Herdubreid
Mount Krabla
Mount Myvatn
Mount Godthaab
Mount Reikianes
Mount Snefell
Mount Hofde
Mount Hafnafiall
Mount Esia
Mount Skardsheidi
Mount Hafursfiall
Mount Hvitserk
Mount Kirkiufell
Mount Thyrill
Mount Hlidarfiall
Mount Hestfiall
Mount Hornafiall
Mount Ingolfsfiall
Mount Hengifiall
Mount Vadlafiall

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PREFACE.

HIS Danish Majesty being particularly anxious to acquire a proper knowledge of Iceland, one of the most interesting parts of his dominions, lately directed the Academy of Sciences to employ proper persons to travel over that Island, relative to which only vague and imperfect ideas had hitherto prevailed. Messrs. OLAFSEN and POVELSEN were in consequence chosen for this undertaking; the former being a native of Iceland, and the latter resident there in the quality of first physician. These two learned men, by the alacrity and pleasure with which they performed their task, succeeded in collecting the most complete information on every subject, and have gratified the world with a full and authentic account of the civil and natural history of that island.

From their own observations, with the assistance of the manuscripts of other learned men, the present work was prepared for the press, under the auspices of the King of Denmark and the Academy before-mentioned; and hence no fact of the smallest interest relative to that region, is now unknown.

The authors, in arranging their materials, divided the country into Quarters, Districts, and Jurisdictions; and of each portion of these they enter into separate details. The editor, in his translation, shall adhere to the same plan; and he has no doubt, that the variety of intelligence thus afforded in a small compass, of which every sentence may be said to contain a fact, will be found more agreeable to his readers, than the uniformity which would prevail in such a work, if divided into a series of chapters.

The English Translation will be illustrated with a map of the Island, and with copies of the principal engravings contained in the original work.

TRAVELS IN ICELAND.

SOUTHERN QUARTER.

DISTRICT OF KIOSAR.

IN the month of July, 1800, Messrs. Olafsen and Povelsen set off from Copenhagen and arrived at Laugernes, in the district of Goldbringue: they thence passed into that of Kiosar, but being desirous of entering the northern quarter before the approach of winter, by crossing the mountain of Kioel, they at first went through a very small portion of this southern district. They however returned thither in the following year, and concluded their vast undertaking by completing their observations on the southern part of Iceland.

OF THE DISTRICT OF KIOSAR, ITS MOUNTAINS, &c.

This district forms a tongue of land which passes into the great Farafiordour, between the glacier of Reykenes and that at the western extremity, which from its situation is called Wæster Jœckel. This tongue of land extends as far as the sea, and at its southern extremity are the isles of Thernoé and Loundoé, the latter of which only is inhabited. The principal and highest mountain in this country, is that of Esian, to the north of which appears that of Rheinevalle-Halsen, with a file of others detached and of a smaller size.

ERUPTIONS OF MOUNTAINS AND GLACIERS.

From the situation of this country, it is often threatened and damaged by disruptions of the mountains, which generally happen after heavy rains in summer; but principally when these occur in spring and autumn, they undermine and detach from the mountains enormous masses of rock, which only adhere to them by a small portion of cemented gravel or mould. The inhabitants are also much exposed in winter by the rapid fall of vast conglomerations of snow, which are formed on the glaciers. When these heaps accumulate on the summits of the mountains, they appear like arches above the vallies, into which they are at length precipitated by their own weight. From the ancient and

modern chronicles of this country, we learn of many periods when men and cattle have been destroyed by such accidents. One instance, in particular, is worthy of mention; as M. Jonsen, a learned man of extraordinary merit, lost his life on the occasion. This event occurred in February, 1699, and overwhelmed a whole presbytery with all its inhabitants and cattle.

NATURE OF THE MOUNTAINS.

The mountains of Iceland should be divided into two kinds, ordinary and extraordinary, in order that the one class may be distinguished from the other; though it is only from their external appearance, that they are intitled to this distinction. By the ordinary, we mean the primordial or most ancient mountains of the country, which appear to be formed by from twenty to forty strata or beds of rock cemented on each other. The extraordinary ones, on the contrary, consist of rocks intermixed, as it were, by chance, and cemented together by gravel and strong hillocks of earth; hence it will not admit of a doubt, that they have been formed by volcanoes. Some of them are red, others black, and a few of a white colour: the red and black are composed of lava and pumice-stone, while the white, on the other hand, consist of gravel and of white or greyish clay. In some of these white mountains may be observed the effects of a boiling water. The extraordinary kinds may be subdivided into ancient and modern; among the former of which are all the glaciers. With respect to their height, the greatest are from 400 or 500 fathoms, to 1000 and upwards. Those of a second rate are about 300 and the smallest 100 fathoms in height. We measured them with the astrolabe, and others have done the same with the barometer.

OF THE MOUNTAINS OF KIOSAR.

The Kiosar, from which this district takes its name, and several others in the vicinity, belong to the highest or primordial class, as being the most ancient; they, however, consist of only a small number of rocky strata, accumulated without order; and their summits are composed of long masses of rock of a deep grey colour, presenting an almost perpendicular façade, while their bases are concealed by the eruptions that have taken place.

DIVISION OF THE INHABITED PART.

The mountains of the district of Kios are intersected by beautiful vallies and plains, which contain three dioceses and a number of churches. It is watered by several rivers and rivulets abounding with fish; but of these rivers the Helleraa and the Laxaa are the principal. There are likewise numerous lakes

of fresh water, containing plenty of trout. The principal lake is the Medalfells-Vata, in the diocese of Kios, and from this is formed the Laxaa: it surpasses all the others in grandeur and utility; and affords throughout the year a quantity of trout of a most excellent flavour. The springs and rivulets yield abundance of very limpid water throughout the whole country; but it is rather of a styptic quality, probably, in consequence of the ferruginous earths through which it filtrates. The inhabitants, however, do not experience the least inconvenience from this circumstance. In the eastern part of the first diocese called Mosfell-Sweit, are some hot mineral springs, the water of which is light, limpid, and tasteless; while its degree of heat will admit of the immersion of the hand without scalding. One remarkable effect of this water merits attention. The pebbles over which it runs in the open air, are covered by it with a thin white incrustation, on which aquafortis will not act.

OF THE AIR AND TEMPERATURE.

Although the frost in this country is not very severe, the air is sensibly affected by the saline vapours, conveyed from the sea by the W. S. W. and N. W. winds; hence the inhabitants complain of extreme cold, though the thermometer is only at zero; while, on the other hand, it does not affect them, when with the N. and N. E. winds, the thermometer is at its lowest degree. It is also remarkable, that the cattle left in winter in the fields, are much more sensible of the W. than of the N. E. winds. To the saline vapours may also be attributed the frequent rains that fall in the vallies, while it snows in the mountains. It also often happens, that rain falls in the canton of Kios, while the environs are perfectly dry. This undoubtedly arises from the clouds breaking against the mountains that surround the plains.

OF THE HEAT AND COLD.

In winter the cold is not very severe; for, from various observations with Fahrenheit's thermometer, it is ascertained, that the extreme degree does not pass beyond 24 or 20, except when the sky is very serene; at which time the mercury falls to 12, and sometimes even into the bowl. The greatest degrees of cold prevail in January, February, and March.

PERNICIOUS WINDS OF SPRING.

In April and May there occurred strong easterly winds which are very cold; and when they are of long continuance, they weaken the cattle to such a degree, that they often die. They also dry up the ground so as to prevent the grass and plants from shooting in the ensuing summer.

OF THE HEAT OF THIS CLIMATE.

As the cold of winter is of long duration, the heat of summer is subject to variations. It has been remarked that at the end of June, water was frozen in the night, though on the preceding day the thermometer was at 70°. It is generally, when exposed to the open air, at 80 and 90°; but it does not remain long at these points. Mr. Childrey, in his "Natural Rarities of Middlesex," as well as other writers, assert, that the greatest heat of the air in summer is between one and two in the afternoon; but their observations will not apply to this district, nor, generally speaking, to the whole climate of Iceland. It has often been observed, that the mercury, which continued to rise till noon, afterwards fell; and it is known, that the slightest change in the air or even a simple gust of wind is sufficient to produce a variation in the heat.

WEIGHT OF THE AIR.

This is very unequal and various; the difference that has been remarked in the barometer between its highest ascent and lowest fall, has been only two inches. In the space of five years it was only once observed at two inches and three quarters. Our travellers state, that they twice witnessed very sudden and altogether singular changes in the barometer.

METEORS.

It rarely thunders in these countries, and then mostly in winter: the other extraordinary meteors are even less frequent. When the winds blow strong, the air is heavy and large flakes of snow fall, a faint light is perceptible in the lower atmosphere; but it speedily disappears. There is also a kind of will o' the wisp, that follows persons in the fields; but it seldom occurs in this country; though scarcely a night passes without an aurora borealis of innumerable colours which make the most beautiful appearance.

OF THE MISTOUR.

When the atmosphere is suddenly overcast beyond the mountains to the east of Mosfell-Sweit and becomes brown and black, it is an indication of an approaching storm from the E. or S. E. The wind succeeds in about one or two hours after the abovementioned appearance, and this obscurity lasts from a day to a day and a half: the inhabitants call the phenomenon Mistour. The impetuosity of the wind speedily carries beyond the extremity of the diocese, the cloud of dust that obscured the air; and as soon as it is perceived by the sailors, they begin to take their precautions. This phenomenon occurs every time that a

strong wind blows from the glaciers of the eastern quarter towards Rangvalle, and the deserts that surround Mount Hecla; because there rises in the air a column of pulverised pumice-stone, sand, and dust, which is conveyed by it beyond the western provinces, as far as Mosfell-Sweit, which distance is equal to two Danish miles.

OF THE DIFFERENT KINDS OF SOIL.

We find here as elsewhere, that common kind of black or deep-brown soil, generally called garden-mould; hence grass and plants vegetate on the surface in every spot, where the soil is susceptible of fertility. This mould is tolerably elastic, but its strata are seldom more than a Danish foot in thickness, except in the vicinity of the houses, where it is annually manured. Nearly half of the district in question consists of marshy ground, in which are strata consisting of reddish mixture of sand and clay from three to six inches thick; beneath this is a stagnant mud, composed of plants that have rotted and a feruginous ochre; the latter is very elastic, moist and full of stones, and its layers are generally three or four feet thick.

OF TURF *(Humus bituminosus)*.

Beneath this swampy or putrid soil, is found a bituminous earth, which the inhabitants call *Mor* or *Torf*, its layers are from six to eight feet deep. It is dug up with a kind of spade, and being cut into cubes and dried, is used as fuel.

This bituminous earth is here of great advantage as well as in the whole southern part of the island; because it is a substitute for wood. In digging it they meet with branches of trees, and sometimes even with lumps of wood of a considerable size; and the places where this bitumen is found, were, according to the accounts of the ancient historians, once covered with forests. Many naturalists assert, that this turf is reproduced, even after its whole stratum has been carried away; and the Norwegians are of the same opinion. The ashes of this turf are generally of a red colour.

At low water, there is also obtained on the shore at Kialarnes another kind of turf, which the inhabitants call Sio; it burns well, but sparkles and emits a sulphureous smell. It is likewise remarkable, that this turf contains branches of trees, which proves, that the place where it is found was formerly a part of the land, on which the sea has encroached. Beneath these turfs, is a stratum of soft and swampy mould, and after it come masses of rocks.

OF THE DIFFERENT KINDS OF STONES.

The most common kind of stone, of which the mountains of this vicinity are formed, is composed of a cemented sand, mixed

with particles of spath. The holes and fissures of this stone are filled with quarz, amongst which may be perceived small hexagonal and rock crystals. On being submitted to fire, the results are not equal, but vary according to the masses of spath and other incombustible matter it contains.

There is a stone, which the Icelanders call Hraun, or melted stone, from its having been expelled from the bowels of the earth by volcanic ebullitions. In some places, this stone is collected into considerable rocks; it is of the same origin as the lava of Italy, and may be classed with what Linnæus calls *concretæ elementi ignei*, though differing from the pumice. On traversing the shore in search of shells, our travellers on their journey to Loundœ made the extraordinary discovery of a bed of this lava, five or six feet thick, and which seems to form the base of that island. Hence they at first thought that subterraneous fires had acted only in this canton; but they were afterwards convinced, that they have prevailed throughout the south of Iceland.

The principal minerals found here, are vitriol, iron, and sulphur.

OF THE FERTILITY OF THE SOIL.

The district of Kiosar produces such an abundance of grass, that each peasant is enabled to keep during winter six or eight cows and from forty to fifty sheep; but from the small profit they derive from their cattle in the course of the year, it must be concluded, that they are only half-fed, or that the grass is of a very inferior quality to that of the northern and western parts of Iceland; since the peasantry of those quarters acquire full as much advantage from their cattle without giving them half the food they receive in the south.

There are amongst this people a series of laws connected with agriculture, which comprise the tarifs of the country, besides different statutes relative to commerce: the people implicitly submit to them, though they neither emanated from, nor are sanctioned by, the King. The following is an instance of their nature; a cow is not saleable, unless she give in summer two pots of milk in twelve hours, and then, she is only considered as an inferior animal; because a good cow is expected to yield from six to ten pots even in winter, provided she be well fed. It has, however, been observed, that in the district of which we are speaking, the cows seldom give more than two pots of milk, and few of them produce more than four, however well they may be kept.

The bad quality of the grasses and hay may be attributed to several causes. The grass in general has not so much sap, and

is consequently not of so good a kind as elsewhere: the cattle eat it with avidity, and fatten on it almost perceptibly, but they lose their strength; which happens, as experience has proved, in every part of Iceland, where the soil produces a quantity of horse tail. It is well known that this plant is vulnerary and astringent. There is a law which enjoins the inclosure of all pasturages and meadows, which has existed for three centuries, but now is no longer adhered to. The people merely set a child to watch their cattle, and who is not able to prevent them from entering the meadows. The superficial stratum of the soil gradually dries by the sea-winds; and the snow does not sufficiently cover the ground in winter; for though it sometimes falls in great quantities, it is soon melted and absorbed by the thick vapours from the sea. And lastly, their manure, at present, is of little use. Many of these inconveniencies might be remedied by rendering the soil heavier by manure; and if, every time an excavation is formed in the ground, care were taken to fill it with turf or fatty matter, to prevent it from becoming larger by the action of wind and rain. The principal cause of the bad quality of the fodder is, doubtless, the little precaution used at the time of hay-harvest, as the hay is seldom dry when they stack it, by which it frequently heats and takes fire; the stacks also being much longer than in most countries, sink in the middle, and form a reservoir for rain, which deprives the hay of its best qualities. It is, however, worthy of remark, that, on advancing towards the mountains, the land is richer, and the grass and plants possess a more nutritive quality; indeed our travellers, when proceeding along the ridge of Keller-Heide, were surprised at the beauty of the surrounding country, which produced abundance of excellent grass and *Hieracium* or Wild Sorrel.

PLANTS.

The principal plants found in this district, and most of which serve as food for cattle, are the following: *Equiseta; Rumex acetosa; Taraxacum; Hieracium; Ranunculus acris; Lapathum foliis oblongis crispatis; Thlaspi bursa pastoris; Caltha palustris; Carex Linnei, pinguicula; Menianthes, trifolium fibrinum; Comarum palustre; Alchymilla alpina; Spirea ulmaria; Galium luteum; Galium boreale; Trifolium pratense, flore albo; Potentilla argentea; Statice armeria; Anthyllis vulneraria; Plantago maritima, Linn. Foliis linearibus; Plantago foliis punctatis; Cochlearia; Rodiola rosea; Cucubalus Behen albuna; Sedum vermiculare; Urtica urens; Alchymilla vulgaris; Geranium montanum; Saxifraga autumnalis, flore luteo; Lichen Islandicus; Fuci marini.*

OF THE INHABITANTS, THE PREVAILING DISEASES, &c.

The inhabitants of this district are robust and well-made; but it is difficult to find any with that ruddiness of complexion which is a general indication of good health; on the contrary, they mostly have a wan look, because they are continually fishing up to the middle in the sea, and often exposed to the rain and wind. It has been remarked, that the people in the interior of the country have a much better appearance than those who live near the sea-shore.

On the whole, however, they enjoy a good state of health till the age of fifty, when they begin to lose their strength. The following are the most common diseases to which they are subject: catarrhal fevers are very prevalent, but more so in the interior than along the shores, probably from the circumstance, that the inhabitants throw off their clothes during and after the hay-season, and thereby expose themselves to colds. The fevers are accompanied with a cough and expectoration; and it has been observed, that this expectoration is not the same with young as with old people: the former only throw up phlegm, while the latter expectorate a more viscid substance. Pleurisies are also commonly accompanied with inflammatory fevers, constipation, and pains in all the limbs; and these diseases often becomes epidemic. Diarrhæas are very common; particularly in spring, towards the coast, in consequence of the introduction of great quantities of fish and other fat aliment, after a scarcity of other provisions. Our travellers found, in this district, only two children affected with the *Carcinoma infantum*: while in that of Goldbringue, they are almost all subject to it from the second month to the third year of their age. The inhabitants of this country are frequently afflicted with contractions of the lower belly; the women are subject to obstructions of the menses; and the hypochondriacal affection is very general; but the inhabitants not knowing how to define it, give it a name which answers the idea of a disease in the breast.

The inhabitants of the district of Kiosar are indolent, taciturn, and insensible to every thing which does not relate to their private interest.

OF THEIR HOUSES, INCLOSURES, &c. &c.

The worst houses are in the southern part of the island, which being inhabited principally by fishermen, contains nothing but miserable huts. It is, doubtless, from this circumstance, that Anderson, and other travellers, have given so unfavourable an account of the houses of the Icelanders. Those who have travelled through this country with a view to observation, must ad-

mit that the houses of these people do not appear to strangers so singular as they have been described: they are built upon a line of ground covered with verdure, which every where gives them the appearance of their being situated in the country; their fronts are whitened, or sometimes painted red. The part of the street that runs in front of the houses is paved with flags or flat stones, on which you can walk with dry feet, however dirty may be the road beyond them. The Icelanders have adopted a manner of building very suitable to their country; they are more secure from cold than in apartments surrounded by brick-walls. The houses, at the same time that they better resist the intemperance of the seasons, are more secure than other kinds against earthquakes; for there have been numerous instances, in which very violent shocks have not damaged any one of them, while every person walking in the open country has been thrown down. The present manner of building, however, in Iceland, is not so solid as that which prevailed about two centuries ago; the ancient art of building is forgotten, while the timber of the present day is too bad and scarce. It would be an improvement to their houses if they were not to apply their covering of turf in a moist state immediately upon the wood-work, but to place between them a thick layer of dry moss or hay; besides this, their present walls are too thin, though there are some houses that have existed upwards of a century, as may be ascertained by the difference in their structure, and it would be well, if the art of building adopted by their ancestors were restored.

MANNER OF LIVING AMONG THE ICELANDERS.

It is remarkable, that even the people of Iceland are emulous to imitate strangers in the luxuries of life, and splendour of the table; but it must not be supposed, that the peasant of the present day follows, in every respect, the same kind of life as his ancestors. He has adopted many foreign articles; but the majority have retained the custom of eating liquid food at the end of their meals.

The Iceland peasant takes three meals a day; he breakfasts at seven in the morning, dines at two in the afternoon, and sups at nine in the evening. His breakfast consists in summer of coagulated milk, the whey of which is expressed, and the curd diluted with skim or fresh milk. In winter the common dinner is dry fish, and afterwards the same kind of milk-soup as has been just described, with the addition of cheese and bread, or cake. They give the name of cake to a kind of biscuits, made of flour, about three lines in thickness, and a foot in

diameter. They are dressed by exposing them to the fire on a flag-stone, and they will keep for a long time.

On Sundays they have a few dishes extraordinary; such as gruel made from barley or buck-wheat boiled in milk, or porrige, composed of milk and flour. Fat soup, meat stewed in skim milk, and eaten with different sauces; to which may be added a variety of other ragouts, customary in the country. On the grand festivals of Christmas and Easter, they would think themselves lost, if they did not all have smoked meat, which they dress on the preceding evening. The peasant is not much in the habit of salting his meat, but prefers pressing it, to expel the superfluous juice; he then leaves it for a couple of days, that the remainder of the juice may dry up, and afterwards hangs it in the chimney, eight or ten feet above the hearth. Some travellers have asserted, that meat prepared in this way is liable to spoil, but they are mistaken: it on the contrary keeps better than that which is smoked in other northern countries, and which is known by the name of Hamburgh beef. At Christmas each family kills a fat sheep, which is eaten with a sauce composed of milk gruel. The peasant never roasts his meat, but always eats it with this kind of broth, when inclined to regale himself. Besides the above-mentioned festivals, there are other days devoted to feasting. After the harvest they consume in each family what is called the fat lamb, or a sheep, if they have no lamb. On Shrove Tuesday they are obliged to give their workmen and servants as much smoked meat as they choose to take; on the next day meat is forbidden till Easter; and during this time they even avoid pronouncing its name. On Shrove-tide evening they make a joke of tampering and inciting each other to pronounce the word meat, because any person who says it loses his portion on the following day. This abstinence appears to be one of the remains of Catholicism. On the first summer's day, which commonly falls on a Thursday, between the 18th and 25th of April, they are obliged to regale all their people with fresh, and, to them, delicate food, such as sausages, smoked mutton, fish, and fresh butter.

In the parishes that are distant from the sea, they have various other dishes, of which milk forms the basis, the difference of which our travellers did not fail to observe, in their way through the districts and cantons. It should be added, that some of the peasantry are in very easy circumstances, and procure many foreign luxuries; but the poor inhabitants are proportionately numerous, and indeed the great majority are obliged to subsist upon what their own country affords.

With respect to vegetables, Iceland in general is very poor. A royal ordinance of 1749 enjoined all the inhabitants to culti-

vate cabbages: but it required much trouble to make them discover the advantages of such culture. Those of the district of Kiosar were the most obstinate in this respect, and the administration was obliged to compel them to raise this useful article.

The inhabitants in easy circumstances almost all use salt-butter, while the peasantry and poor people eat in winter what is called sour butter, and in summer the fresh or unsalted substance.

Olaus Magnus says, that the Icelanders once had a great trade in salt butter; but the experience of three centuries causes us to doubt this assertion, which is not supported by those authors who have written on the ancient history of these people, though they have entered into many details on their economy.

Whatever care may be taken in Iceland in salting butter, and whatever may be its quality, it is not possible to preserve it good beyond a year; and it does not appear that there is any method of effecting this purpose: but the case is different with acid or sour butter. When care is taken to churn and wash this butter, it may be preserved for twenty years and upwards, without losing either its goodness or its first acidity. At the time the Catholic Religion prevailed here, there were large magazines attached to every bishopric, which served as store-houses for this butter; and in years of scarcity it was distributed to all who wanted it, though principally to such of the peasantry as were vassals of the bishop. These magazines existed even for some time after the Reformation.

A circumstance that gives more certainty to the preservation of sour butter is, that it is well known that it does not readily spoil, particularly in cold countries, provided it does not contain any of the milk, or other matters susceptible of fermentation. It acquires acidity after remaining for six months, and becoming gradually white: as soon as one is accustomed to it, the taste is agreeable, and it is very salutary, particularly in winter. On eating it with dried fish, which forms a constant meal in this country, you feel, as mastication proceeds, a gentle heat expanded through all parts of the body; and, by this action, it facilitates much better than salt butter, that insensible transpiration, so necessary for the preservation of health.

The Icelanders in general, however, do not make much use of butter before it is sour, because it becomes yellow and mouldy, by the formation of lanuginous flowers (*Flores lanuginis*), proceeding, doubtless, from the essential salts that cause fermentation with the solid and aqueous parts. In this change, heat undoubtedly produces a great effect, by giving rise to a very subtile and acrid salt; but as soon as all the parts are well amalgamated, the butter may be preserved without alteration for a great number of years:

the poor people would not change this butter for the best salt kind in the world. It is worthy of observation, that they here make butter equally as well from the milk of sheep, as from that of cows, either by mixing the cream, or by keeping it separate. When made only of sheep-milk, the butter is whiter, and sooner turns acid. They are, however, too much in the habit of putting salt to the butter when in a state of fermentation, by which, in a short time, it acquires a disagreeable taste, and finally becomes so bad, as to be useless: it is this kind of butter that they export. When the sour butter is too old, it loses in its acidity and weight, dries up, and acquires a rancid taste. If melted when in this state, it does not give more than half its ordinary portion of oil.

OF STEEPED OR MACERATED FISH.

The peasants, and even persons of respectability, never eat the cod-fish in its fresh state, but dress it only when it has attained a certain degree of putrefaction. The Icelanders are not the only people amongst whom this custom prevails, as it is followed by several of the Northern tribes who inhabit the coast. They adopt the same method with other fish of large kinds, whose flesh is tough, but principally with the *Gadus lineâ laterali nigra*, and with the large common thorn-back, (*Raya vulgaris maxima*) which they consider as unwholesome and disgusting when fresh, on account of their long and hard filaments: they, however, eat, as soon as caught, the small species of fish, such as trout, soles, and others of a delicate flavour. It is only the two above-mentioned kinds that they hang on poles in their drying-room, which is a hut impermeable to the rays of the sun; by this process, the fish acquires a bitterish taste. After hanging a fortnight, three weeks, or even longer, if the weather be not too hot, the fish attains a very alkaline smell; and the muscles and filaments are then soft and digestible; if, on the contrary, the fish be exposed beyond the proper time, it becomes corrupt, the muscles separate, and it is no longer eatable. From this statement we may know how far the accounts of travellers are to be relied on, which state, that the Icelanders live upon stinking fish; on the contrary, it is only the largest kind of cod-fish, that they steep, in order to cause the fermentation of the nauseous and indigestible juices which they contain in their fresh state. It might even be asked, whether it would not be inimical to health to eat these fish soon after being caught; and this might give rise to another question, why, for example, in the greater part of Europe, they do not eat game till it has been kept, and acquired a strong taste. We think, that the conduct of the Icelanders, with respect to their fish, is the same as that of other people in keeping game,

since the fermentation of the natural and superfluous juices is performed in the same manner in game, whether quadruped or volatile, as in fish.

OF THEIR BEER AND OTHER FERMENTED LIQUORS.

The Icelanders brew a tolerably good beer, but they do not make a daily use of it; their ordinary drink being skim or butter-milk, to which they add a little water after it has acquired a certain degree of acidity and strength. By the old laws of the country they are compelled to form another drink from water and a twelfth part of *syre*, which is an excellent kind of butter-milk or whey, that has been kept for some time. The fermentation of their wheys takes place slowly, in consequence of which the top is covered with a skum, while the grosser particles fall to the bottom; but these simple people do not know that this is effected by the fermentation itself, though they often find, that the casks or other vessels, in which they preserve their whey, burst, when air is excluded from them. They use this same whey for pickling or preserving different articles; but they likewise experience, that when it has not arrived at perfection by fermentation, the objects immersed in it spoil, though, when it is good, they acquire a nice taste, and will keep for upwards of a year.

OF SWEET MILK.

When the Icelanders receive company they present their guests, as well as strangers who visit them, a draught of milk: this is also their regaling drink on the days of their grand festivals; and they mostly use it without boiling: it forms the principal food of their children, when at an early age, and they give it to their sick, to whom it is very palatable. A tun of skimmed milk costs twelve *alu*, or two marks six schillings, of Danish money.

OF THE LABOURS AND HABITUAL OCCUPATIONS OF THE ICELAND PEASANTRY.

The men are employed, during a part of the winter, in the manufacture of woollen cloths, or in spinning and making worsted stockings and socks, which is, nevertheless, a particular occupation of the women. The inhabitants of Kialarnes are employed in fishing, throughout the year, unless taken off by temporary avocations.

In the spring, all the men may be seen leaving Mosfell-Sweit and Kiosen, for the fishery at Seltiarnes-Naes, or still farther to the southward. The peasantry, who have no possessions of their own, and who consequently occupy a habitation and ground, which they rent from the Crown, are obliged to labour from Candlemas to Easter in the king's boats, or procure a

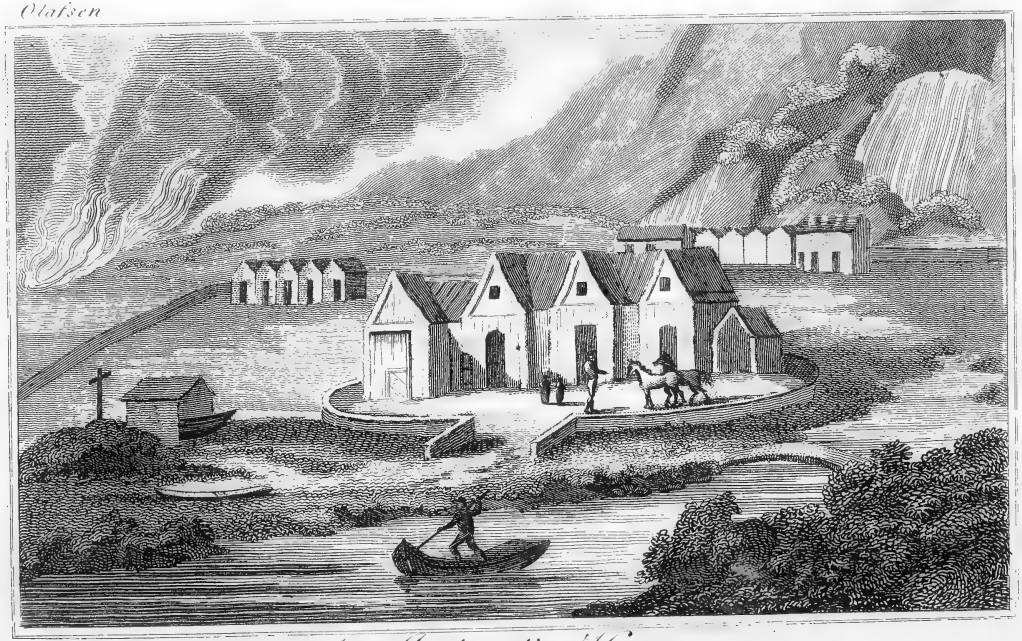
substitute, to whom they pay a rix dollar or Danish crown. As soon as the ice is melted, they begin to work their peats, as already mentioned, putting them to dry, and heaping them in small squares. It is then left till autumn, when each person carries home his supply for the year: some of them houging it while others leave it in the open air, with the simple precaution of covering it as a security against rain.

In spring and summer it is the employment of the women and children to watch and attend upon the cattle, but in winter this task devolves on the men. As soon as the thawed waters have run off, they begin to clear the meadows with forks, or a kind of rake, carrying off the straw and other substances, that have been drifted by the wind, or conveyed by the water, and which would prevent the shooting of the grass. They then lay on a little dry manure, which on the first rainy day they spread over the ground. The peasants of Mosfell-Sweit generally leave to the women all household affairs and attention to the land till autumn, in which interval they are engaged entirely in fishing. Those, however, whose station is at no great distance from their houses, contrive to return every Saturday evening, and go back again every Sunday afternoon.

OF THE HAY-HARVEST.

This harvest is commenced as soon as the grass has acquired its full height, and most of the plants run to seed, which generally happens about the middle of July; though in some years the season is earlier or later, according to the weather. The scythe used by the Icelanders is a Danish ell long by two inches broad; the blade is fixed by means of a leather string to a handle, from one to three ells long, and forming a right angle with the blade. The Icelanders raise the blade of their scythe to sharpen it much oftener than is customary in most European nations; and the stones used for this purpose are imported by the Iceland Commercial Company. The workmen, at least once a day, submit the blade to the fire, in order to thin it, when hot, with the hammer. According to the laws already mentioned, a mower, who is not very expert, is supposed to be able to cut about thirty square fathoms per day, provided the ground be flat and level. When the grass is cut, it is the task of the women to make it into hay, and collect it in cocks to dry. If they are surprized by rain in this season, they speedily heap up the hay in small oval stacks, with their ends towards the wind: these are generally four or five feet high, by one or two in breadth, and eight or ten in length. As soon as the hay is well dried, it is carried home and stacked. If the farm-houses be not very distant from the meadows, they make the hay into large trusses, which are carried home

Olafsen



An Icelandic House.

by men; otherwise they are conveyed by horses, each of which bears two similar bundles, one slung on each side: There is an ancient assize; according to which a *kapall* of good well-dried hay costs 20 *lispfound*, 20 *aln*, or one Danish crown. In spring a kapall of hay fetches thrice the sum it costs immediately after the hay-harvest: the reason why these two bundles of hay do not yield much is, because the hay has neither fermented nor been pressed. For a kapall of hay, weighing about 190 lb. there are paid in summer 8, and in spring 16 lispfound. When hay is scarce, the price increases accordingly; and even 40 lispfound are paid for 2000 weight of hay. In prosperous years, it is calculated that the quantity of fodder, requisite to support a cow, amounts to 10 *oere*, or two Danish rix-dollars. After the hay is thrown up into heaps, trodden, covered, and laden with stones, in order to press it down, the Iceland peasants measure their stock by the fathom, and calculate accordingly the number of cows for which they have provender. They reckon in general one square fathom for a cow; varying the calculation, however, according to the quality of the hay and the size of the cattle; and in some districts upwards of a fathom is allotted to each cow. The hay, collected on the downs and rich soils, is termed *tada*; and that obtained from meadows and marshes is denominated *outhey* or field-hay. The last sort is excellent for horses and sheep; while a mixture of the *tada* with a little of the *outhey* is preferred for milch kine. The harvest does not finish till September. There are stated periods in the Iceland Calendar, for its commencement and termination: it is there said that it should not begin till the 13th, and at latest on the 20th, of July; and that it ought to be concluded by Michaelmas or the end of September. The duration of the harvest is divided into two periods, the first of which finishes some days after the feast of St. John the Baptist.

The chief autumnal business of the countryman is, to collect the sheep that abound on the hills, when he selects such as are to be killed for the supply of his family. His next occupation is to procure turfs to cover his house and shelter him from the rain and snow of winter. These turfs are different from those which the Icelanders employ for fuel: on each side of a packsaddle they place a kind of barrows, of a peculiar shape, on which they load their building-turfs; each of which are nine feet in length by three in breadth. The other autumnal labours are, to build their houses and repair such as require reparation; to get in their turf for fuel; and manure the downs, after the grass has been made into hay.

There is a regulation, fixing the task which a stout lad ought to perform in one day, according to the nature of his work.

This subject has been already noticed, when speaking of cutting the grass for hay: in like manner, a man employed in cutting turf ought to cut and stack, in the course of his day, 700 green turfs, with an assistant, who piles them up accordingly; or 900 other turfs without such aid. A girl is required, in her day's labour, to collect and dry the hay which has been cut by three men; and in winter, when she is employed in weaving, she is obliged to furnish weekly either 25 ells, or 5 ells per day, of *Vadmel*, a coarse woollen stuff, with which most of their clothes are made. A man must exert all his strength, in order to accomplish the task imposed on him for his daily labour. Wages are very moderate; though somewhat higher, in the southern part, as they have not been fixed there by the laws of the country. A domestic, who is a good labourer, gains annually no more than four rix-dollars; and a female-servant only half that sum. A day-labourer, who hires himself to a farmer for the harvest, gets 8 rix-dollars; and, if he is employed throughout the summer in these laborious tasks, he earns ten fish, or a mark of the Empire, equivalent to about 10 schillings per day. Several years have elapsed since this last assize has been followed in the southern part of Iceland: and all the ancient and modern regulations on this subject prove that the Icelanders think it contrary to the public good, and disadvantageous to every individual, to fix too high the value of a day's labour. Various acts of the government have enacted that the wages of a stout hearty youth, obliged to do all the work of husbandry, whether abroad or at home, shall (exclusive of board) be 8 ells of *Vadmel*, and ten *oere*, or two rix dollars; together making somewhat more than three rix-dollars. If, however, a man-servant possess any other talents, for instance, those of making household utensils, whether of wood or iron, he shall be allowed twelve ells of vadmel, and four rix-dollars in money. The wages of a good house-maid, capable of undertaking every thing connected with the family, and who is also skilled in working wool, are fixed at 5 ells of vadmel, and the remainder in money; amounting in the whole to two rix-dollars annually.

It was formerly the practice for an opulent countryman, who was not a vassal, always to reward the long and faithful services of a man or woman whom he had hired, by giving them at their marriage, furniture, utensils, and a sufficient quantity of tools to enable them to begin the world. A cow and some sheep, or at least a calf and some lambs, were sometimes added. This hope of reward was a great encouragement to industry and fidelity; but that practice has gradually fallen into disuse; and in the 16th century it had nearly become obsolete.

Olafsen. *Iceland.*

1. A Peasant Woman. | 3. A Peasant.
2. A Lady of rank. | 4. A Wedding Dress.

NATURAL INDUSTRY OF THE ICELANDERS.

Although the Icelanders cannot procure instruction, like other nations, in the various trades, yet nature has conferred on some of them sufficient address and genius, to instruct themselves in the manufacture of every sort of household-utensils, whether of copper, iron, wood, or any other material. They succeed well enough for the purposes for which they are intended; but we cannot expect them to be either so well, or so neatly made, as by our workmen, who have served a long apprenticeship. There are some of them, however, who have as much ingenuity as our best mechanics: and there is scarcely a parish, but has one of the *Smidours*, or men acquainted with every kind of handicraft. They work either in wood or metal, according as they are desired; but they excel in wooden work, in building houses, in flooring or wainscoting rooms, as well as in manufacturing every kind of utensils, both large and small; in making scythes, constructing fishermen's boats tackle, besides many other similar works; others excel in iron-work, such as small hatchets, saws, large augres, blades for planes, knives, scythes, nails, horse-shoes, locks, keys, traps, and other articles of this description. Others manufacture in copper and brass, various pieces of ornament, such as buttons, buckles, women's girdles, rings, the decorations of saddles and harness, &c. Lastly, there are some, who work very neatly in silver: they make various decorations for females, partly polished, partly embossed and chased, buttons, sheaths, handles for knives, &c. &c. Although the inhabitants of the district of Kiosar have not much occasion for these articles of luxury, yet they have among them *Smidours*, who are every way capable of manufacturing them as well as the other things above-mentioned. There are, however, various articles of iron, sent by merchants to Iceland, such as large anvils, saws, hammers, shoes for horses, &c. They have a ready sale, because every thing is better wrought, and is sold at a lower price than what is made in the country; but it must be at the same time declared, that the articles manufactured by the Icelanders are far more solid than those which are imported. These people are likewise extremely expert in inventing traps, snares, and hooks, for catching foxes, sea-dogs, birds, and salmon.

COMPUTATION OF TIME, OR ICELAND CALENDAR.

The computation and division of time into years, and months, is of great antiquity among the Icelanders; though this knowledge has been acquired by them from other nations: at present we shall only notice the manner adopted by the country people for

dividing the day into hours. In the most remote ages, the course of the sun and the different regions of the horizon enabled men to discover a calculation of time. The first inhabitants of Iceland divided the day into eight equal parts; and gave the name of *Dagsmaurk* or signs of the day, to half parts or intermediate points. It is worthy of remark, that they did not divide the horizon according to the four cardinal winds, but according to the wants of their economical life: Our travellers made this observation throughout the upper part of the isle, where no one has yet thought of regulating, by means of a compass or sun-dial, the Dagsmaurk or signs of the day. The following is the division in question. They term the time when the sun is in the east, *Midour-Morgen,* which is six o'clock with us, while among them it is only 5 or half past 5 in the morning; because we are an hour or an hour and a half earlier than they. Their *Dag-maal* is, when the sun is in the south-east, and is equal to nine o'clock in the morning with us, whereas it is only half-past seven with them. *Gaadegue,* or mid-day, when the sun is full south, or at noon, is according to their calculation only half past ten or eleven. We are ignorant what name they gave to the period of three o'clock, when the sun is in the south-west; and their *Mitour-Artan* designates six o'clock in the evening, when the sun is in the west. These two periods perfectly correspond with ours; except their *Natt-maal,* when the sun is in the north-west and it is nine o'clock with us, means with them only eight. *Midnætta* is their midnight, and *Otta,* three o'clock in the morning. This division prevails along the coasts, especially where there are many parts frequented by strangers. There are even places where they have two *Dag-maal* and *Gaadague;* because the inhabitants, being informed by foreigners that their method of keeping time did not correspond with ours, have regulated these signs by a watch, or more frequently by a compass, though without regarding the declination of the needle.

The inhabitants of this district, and in general those residing on the coasts, calculate their hours of the day by the ebbing and flowing of the sea; and particularly when a thick and condensed atmosphere conceals the sun from them for several days. They also know that this ebbing and flowing does not correspond with the phases of the moon, as the highest and lowest tides do not take place for two days after the changes of that planet, and scarcely ever before. This natural irregularity they have denominated the *Efter-Stroemme* or latter flux, chiefly when it takes place after a considerable rise, which they distinguish by the name of *Stor-Stroemme.* They do not, however, guide themselves by this; for when they are several days without

seeing the sun, they work only for a few hours, and then only calculate them by guess, according to the rise and fall of the tide.

The people who are dispersed over the interior, regulate their hours chiefly by the moon, the pleiades, ursa minor, and a few other stars; especially in winter, when the nights are extremely long. These good folks have in general but little acquaintance with astronomy, and know only a very little of the stars by their names; though, from an ancient chronological manuscript intitled *Blanda*, and written about the 13th century, it appears that the ancient Icelanders were better informed.

SADDLES AND PANNELS OF HORSES.

The inhabitants of this district, and of that of Goldbringue, are by no means fond of travelling: they rarely quit the district, and many of them have never gone even as far as its boundaries. Their ordinary routes are from their respective houses to church, whence they return home the same way. In frosty weather, both men and women go thither on foot; but when it thaws, they ride on horseback, as the roads are then scarcely passable: and, for this purpose only, almost every peasant has at least one horse in his stable. In summer every one rides, however small the distance may be. The Icelander makes no use of the saddle when he only rides into his fields, and does not travel far from home: he throws over the animal for the time only, a sort of woollen cushion; which is about six feet in length, half a foot wide, and one inch and a half thick. He carefully folds it and fastens it with a girth. When he is going to church, he lays over this cushion a saddle, nearly of the same shape as ours, excepting that it is stouter. These saddles are covered with black leather, and ornamented with brass: when well made, they cost from 4 to 5 rix-dollars; the stirrups, bridle, and crupper are decorated with the same metals, of which also the buckles and nails are made. The men's saddles have no breast-girth. Their saddles, and in general all their harness, are made of ox-leather; the hides are prepared, by being well-stretched, in order to dry; when they are rubbed with fish-oil till they have imbibed the fluid, after which they are slightly but frequently beaten with a strong stick. Next, they are trampled under foot, till they become soft and pliant; and are finished by being blackened, or rather tinged of a red colour with the rust of iron, or bark of the birch-tree. Calf and sheep-skins are prepared nearly in the same manner. It is a pretty common practice, when they are going only to church, for the men

to place their wives on a pillion behind them, with their face to the left; that is to say, their right arm is round the back of the horseman. In other parts of the island, the women often ride singly, on a side-saddle, as may be seen in Denmark and elsewhere: but they are decorated very differently, being frequently covered with blue or green cloth, and embellished with brass plates on which are inlaid a variety of figures, such as lions, bears, and birds. From each side of the saddle hangs a square piece of cloth: the bridle, breast-girth, and the crupper, are richly ornamented with nails in the form of buttons. It is, however, only people in easy circumstances, who have such trappings; for such a saddle, as we have now described, of the first quality made in the country, costs 20 rix-dollars. They are more rarely used in Kiosar, than in other parts of the island.

When they go to a distance, for instance to the town, or to the places where there are commercial establishments, to purchase fish, or withersoever their business may call them, the Icelanders carry with them one or two pack-horses; the saddles of which rest upon a green sward turf, and are fastened with three girths, which are in general made of horse-hair. On each side of the horse, these pack-saddles have three hooks in a line, on which the loads are fixed.

AMUSEMENTS OF THE ICELANDERS.

From the Northern historians we learn, that the ancient Icelanders had several recreative games, and amusements, and which were enjoyed as much by the players as by the spectators. This, however, is not the case with the present inhabitants of the district of Kiosar, who have no taste for any sports; for which they are truly to be pitied, especially in winter, when they have nothing to relieve them from the anxiety and trouble inseparable from domestic cares.

Of the ancient Icelandic games, none was more fashionable than the exercise of wrestling. In retaining the practice, the terms have also been preserved, which the champions gave to every motion they made; and each of which has its peculiar name. This exercise blends the useful with the agreeable; for there is nothing which gives more agility and elasticity to the muscles.

The smallest and apparently weakest men often overthrow in an instant those who are the largest and most robust; but this only arises from great practice and activity. In former times the most courageous men, and those of the first families in the country, took delight in this exercise; while at present the young people only follow it as an amusement, particularly in parts

which contain an episcopal residence; but some of them excel to such a degree, that they are famed throughout the country. At Kialarnes, where fishing is pursued throughout the year, they are much attached to this exercise, but particularly in the former season, when they cannot continue their occupation on account of the frost. Besides their common method, they have also a peculiar manner of wrestling, which consists in seizing the adversary by the shoulders, and throwing him down. This method, in which there is so little art, is doubtless that which was anciently most practised: it consists less in the agility of the limbs and motion of the body, than in the strength and movement of the head. It approaches near to that of the English, in which the inhabitants in the county of Cornwall are the greatest adepts.

OF THEIR SAGAS AND HISTORICAL RECITATIONS.

The most noble pastime was, undoubtedly, that pursued by the Icelanders before the first depopulation of this island, which was that of reading publicly their *Gamla-Sagar,* or the history of their country written in the Icelandic language. Before any persons seriously devoted themselves to writing history, it was usual to relate in societies certain adventures and other facts worthy of retention; for this purpose, those were chosen who possessed the best information, together with oratorical talents: and they were generally found amongst the bards, poets, or other persons of distinction. If, in a company, any individual related a history with more precision and detail than others, he was justly recompensed by the approbation and applause of the auditors. After this they transmitted the principal incidents to their posterity, by carving them on their doors, bedsteads, and pannels of their apartments. It was not till the thirteenth century, that the Icelanders seriously applied themselves to the writing of the history of their own and other Northern countries; they, however, retained the custom of reciting anecdotes and facts of different periods. Their history of King *Haguen* the Old, is a proof of this statement, it being composed principally of such recitations at their meetings in the evening, that is to say, in the interval between the decline of day and total darkness; for, as long as there was any light at all, they continued historical readings. They chose for their reader a young man of the house, of good elocution; or they sometimes gave preference to one of the guests who possessed similar talents. If the master of the house happened to be fond of history, he procured a number of books for himself and his family, which he read on the winter evenings to his neighbours and friends,

This kind of reading had the double advantage of relaxation and improvement; besides which, it tended to keep awake those who had business to perform in the evening. After the fourteenth century, the poets employed themselves in writing histories in verse, in order to render them agreeable: they recited them with a loud voice and a musical tone.

OF THE ICELANDIC LANGUAGE.

This language is spoken tolerably well in the district of Kiosar, and it would be wrong to suppose that the trivial change in the pronunciation of certain words forms a particular dialect; though it is a fact, that the difference of the language in some cantons is very remarkable, as it is a perceptible mixture of the languages of Denmark and Norway, which is proved by a variety of Danish words in their juridical acts and other legal writings; though there are likewise many German, French, and Latin words, of which it is impossible that the people can understand one half. This corruption can only be attributed to that spirit of frivolity which induces most people to adopt foreign phrases in preference to their own; or it may perhaps arise from necessity, as the Icelandic jurisprudence was introduced from Norway; but, on the other hand, it may be seen, that those who pique themselves most on writing their language in its greatest purity, introduce a number of Latin and other words. The ancient Iceland idiom is daily losing ground; and though there is scarcely a corner of the island, in which the most illiterate peasant does not understand word for word, and listen with pleasure to the ancient *sagas* or histories. Yet is it to be feared, from the little use they make of it, that the language of Iceland may soon become extinct, which must be regretted, as it is one of the most ancient of the living tongues.

OF THEIR GAMES.

The inhabitants of this district, as well as those of the other parts of the island, play various games, in which they take no small interest. There are, however, few persons in this quarter who know them. They also play at draughts; but in this game they have variations which are totally unknown to foreigners. They play at cards in various ways, particularly a game which appears to be *lansquenet*. It is remarkable, that though, as we have just observed, the Icelanders take much delight in their games, they never either play for money or any other thing; according, however, to all appearance, this was not the case in former times, when there was much cash in the country; and it was doubtless the abuses which then existed, which gave rise to

certain decrees against gaming, principally in the eleventh and twelfth century. One of these states, that, whoever shall be found playing for money, or any thing else, shall be considered out of the protection of the law, so that any man may attack and arrest him. The decree pronounces the confiscation of goods for the same offence.

OF THE ANIMAL KINGDOM.

We shall not here extend our remarks on the animal kingdom farther than will be necessary to give an idea of what relates to the economical life of the inhabitants of this district; but we shall speak more at large on the subject, when treating of the other parts of the island.

HORSES.

There are but few horses in this district, where, however, they are more necessary than in the others. The inhabitants of the country of Kiosar employ them only in summer for their daily rides, in the vicinity of their habitations. They sometimes also serve for statute-work, such as the conveyance of the bailiff of the canton to the place where the court of justice is held. All the carriage of goods and fish is performed by water. There are no studs in this district; nor is there a single saddle-horse to be distinguished from those employed in daily labour. A well-formed mare, without any defects, costs three rix dollars, if above five, or under twelve, years of age; but they are dearer in other quarters, where they are more employed and of a better kind.

HORNED CATTLE.

This district is tolerably abundant in horned cattle; but they are not turned to so much advantage as in other parts. Some wild oxen are met with on the mountains, which all have owners, who mark them, in order to collect and draw them in at the time of harvest.

A good milch-cow, eight years old, which has calved twice, costs 100 or 120 *aunes*, about four rix-dollars, thirty *aunes* being equal to one dollar. An ox, three or four years old, costs as much as the cow just specified; while an ox of eight years sells for 200 aunes, or eight rix-dollars in specie. The price is not always the same; for in some years a milch-cow will fetch upwards of five rix-dollars. The oxen and cows are of various colours: they are mostly without horns; and those with this ornament have them very short. In former times they used ox-horns for goblets; and then they employed a fatty composition for anointing them at the root to increase their growth: they also

a great part of the day in their agricultural labours. They likewise assert that the aquatic horse couples with the common mare, and that thence have proceeded certain horses in Iceland of so ticklish or delicate a disposition, that on making them enter the water up to their bellies, they rear and throw the rider, as well as any burden they may bear.

It is, however, not probable, that the Icelanders, by the aquatic horse, mean the *hippotamus* which is found in the great rivers of Egypt and other parts of Africa. On the contrary, the latter differs in every respect from the description given to the former; and even supposing it to be the same, it might be asked, how it could exist in so cold a climate, and in lakes where it could find nothing to feed on. We may, therefore, presume, that the *Nikour* of the Icelanders is merely a serpent, or some other marine animal of a prodigious size, which may have been often observed in the lakes and rivers.

DOGS.

In this part of Iceland, three species of dogs are particularly remarkable: the first of which is the sheep-dog, or, as Buffon calls it, the Iceland dog; it has long hair, short and thick legs, sharp muzzle, and carries the tail curved and erect. It is of great service to the shepherd, having always an attentive eye over the flocks; and the moment it perceives a sheep to stray, it takes great pains to bring it back. There is another variety of sheep-dog, with rough or frizzled hair, which is extremely adroit, and learns all sorts of tricks. The second species is the largest: it has smooth hair, is high upon its legs, and very similar to the common dog of Denmark; it is trained to fox-hunting, and is very dextrous in unkenneling, pursuing, and killing this animal. The third species is nearly like that last-mentioned, only differing in the thickness of its tail.

CATS.

There is only one kind of cat in Iceland, which is the same as that of Denmark: it is naturally tame, and resides in the houses; though there are some which become wild by wandering in the fields, and take up their retreat among the rocky fragments that fall from the mountains, where they prey upon sparrows and other small birds. It appears, that cat-skins once formed an article of commerce in Iceland, since they were taxed in the old tariffs at half an *ære*, which is equivalent to ten Danish *schillings*.

OF FOXES.

There are two species of foxes in this country, the white *(canis lagopus)*, and brown *(canis vulpes)*. They destroy a number of lambs, and even attack sheep, by fixing on their

wool, and letting them run off with the load, till the sheep, out of breath, falls down, when the fox tears open its throat, and sucks the blood, which it drinks with such delight and avidity, that it often becomes stupified, and drops as it were in a swoon. By this time an active shepherd generally comes up with it, and easily kills it, by blows on the head with stones. It often happens that a fox, fixing to the wool, as above described, is, by a strong and vigorous sheep, carried off with such rapidity, as to become completely giddy, and infallibly to die. There is a reward of a rix-dollar allowed for those who succeed in destroying a litter of foxes; and the anecdotes related by the people of this animal's cunning are innumerable.

MOUSE (*Mus Musculus*).

Iceland abounds too much in mice and rats, and yet there are some parts in which they are not to be seen; for example, the present canton is absolutely free, both from mice and wood rats.

SEA-DOG (*Rocca*).

There may be seen in Iceland several species of sea-dogs, of which no description have hitherto been given; but in the district of Kiosar there are seldom found any other kinds than that known to all Europe, and which the Icelanders call *Land-selour*. Many naturalists, and particularly Pontopp, in his Natural History of the North, boast much of the instinct and prudence of this animal: in this country, however, the people are ignorant of all the wonders related by so many writers on this subject, especially with what is said by Olaus Magnus, who asserts, that this animal is not afraid of the female sex, for which reason in England men dress themselves in women's clothes to catch it. Shildrey also, in his "Bacon of Yorkshire," gives a number of wonderful anecdotes concerning this animal. In Iceland the sea-dog is seldom taken by the net, as they prefer shooting it, which renders it fearful, that it seldom breeds its young in the country. The people, notwithstanding, have a very ingenious and amusing manner of taking this animal; which is, to construct little bridges or crafts, on which it gets to feed its young, and thus may be taken at any hour of the day. The Icelanders and Norwegians formerly derived great advantage from this method; but as the greatest variety of the seal is to be found in the western and northern parts of Iceland, we shall say more about it, particularly of the manner in which it is hunted, when speaking of those districts.

OF BIRDS.

The inhabitants of this country are deprived of a great advan-

tage, since they have neither fowls, ducks, nor other poultry; we, however, find in several of their historians, who are worthy of credit, that they formerly existed in the country, even at the time when it began to be inhabited. The eagle *(Falco Chrysetus)* is very well known here, and may be met with throughout Iceland: it makes great ravages amongst the flocks, by seizing upon all the lambs it can come near: the females of this bird may often be seen carrying off young sea-dogs, to feed their brood; for which purpose they avail themselves of the time when they are sleeping about the rocks that hang over the sea. There is only one species of eagle here; but the variety of colours which prevail in this bird, according to its age, has led many travellers into the error, that there are different species. This eagle sometimes remains in the interior of the country, where it feeds upon salmon and other fish, as well as upon wild ducks and small birds: at other times it may be seen on the rocks, devouring dead fish, or other carrion, that may be thrown ashore by the tide.

THE ICELAND FALCON *(Falco Islandicus)*.

There is also but one species of falcon known in Iceland, which differs only in its size and colour; this difference is in the female, being much longer than the male, while the grey, white, and corbeau-coloured birds are all of the same species. The hunting of the falcon is one of the most interesting sports of Iceland; particularly as it brings to the country every year from 2000 to 3000 rix-dollars. In the districts of Kiosar and Goldbringue, this bird lays but seldom, which may be attributed to the falconers of the King of Denmark destroying such as are brought to them, when they find them too old or unfit for the chace; or even when the plumage has not appeared to them sufficiently handsome, so that for several years together the people have not been able to supply them with birds.

THE RAVEN, (*Corvus Corax*).

The raven abounds throughout Iceland, and indeed is the most common bird there, being so tame, that it comes in winter close to the houses, in search of food. It only differs from the common raven of Europe in being stronger, bolder, and more subtile, as it mixes amongst the domestic cats and dogs. This bird is, however, a great destroyer; it falls upon fish, animals, and every thing it meets with, particularly in spring. At that season they may be seen watching the sheep that are about to cast their lambs; and no sooner does the young one appear, than the ravens peck out its eyes; and they will even attack the dams, unless the latter are strong enough to oppose them. They also

watch the wild-duck when it lays, and driving it from its nest feed upon the eggs. Even horses are not secure from this carnivorous bird; for when they are in the pasture, the ravens search for such as have wounds, rowels, or withers, and, fixing themselves with avidity upon the animal, tear out large pieces of flesh, while the horse cannot rid himself of them, except by kicking in a violent manner, or falling on the ground. The inhabitants of the country are so well acquainted with the artifices of this bird, that they are never deceived by them: when in the winter they see one coming at a great height in the atmosphere, or hear its cry, they are immediately on their guard to observe where it drops, and proceed to the spot to ascertain if it has fallen upon one of their horses or any of their flock that may have died. The people have a high opinion of this bird, and superstitiously believe, that it is not only informed of what passes at a distance, but even of future events; that in particular it foreknows when any person in a family is about to die, because it comes and perches on the roof of the house, whence it proceeds to make a tour round the church-yard, uttering a continual cry, with singular and melodious variations in its voice. They have even attributed to one of their learned men the gift of understanding the language of the raven, and thus giving intelligence of the most occult circumstances; they assert in general, that the raven lays its eggs nine days before the summer solstice, which is nearly about the time prescribed by nature; but they add, that if the winter frosts have not ceased, snow falls, or frost ensues after this period, the bird eats its own eggs and quits its nest, which is an indication of a very severe spring. But notwithstanding the high opinion the Icelanders entertain of these birds, they nevertheless attempt to destroy them entirely, or at least to diminish their number as much as possible, by making a general search for their nests, breaking the eggs, and killing the young wherever they find them. It is remarked, that when the young ravens fall from the nest, and the parents are not able to get them back, they devour them. In severe winters a raven makes no scruple to eat up another, which has either been killed or has died naturally.

When an eagle passes over a spot on which he is seen by the ravens, they immediately collect, follow him; and as soon as he pitches, they surround him at a few paces distance in a circle, to derive advantage from his penetrating eye, which nothing escapes. If the eagle discover a dead horse or other carrion, he fixes on the middle of it, while the ravens arrange themselves around it, without, however, coming too near. It has been remarked, that the ravens seek their food in autumn in every

direction, and mix together in the fields without discrimination, while, on the approach of winter, which is towards the end of October, they pass in couples or in troops of from six to ten or more near a farm, according to its extent or apparent population. If a strange raven, or one of another troop, has the misfortune to fall amongst them, they chase him in the most furious manner, and kill him if he cannot escape.

WILD FOWL.

There are several species of wild-fowl in Iceland; the people shoot them in winter, and in summer collect their eggs.

The wild-duck (*Anas mollissima*) is not very abundant in the districts of Kiosar and Goldbringue, in consequence of the havoc made by the gun, though the sport is in the spring forbidden by law. This bird is not of a delicate flavour, but its eggs are very good, and great use is made of its down. The swan (*Anas cygnus*) is very common in this country, where it passes the winter, and in summer lives on lakes and rivers: when these are frozen, it proceeds to the sea-coast, and in the long and dark nights of winter this bird traverses the air in flocks, making it re-echo with its notes, which are very similar to, and rather higher, than the tones of a violin. One of the troop first begins, and is shortly followed by another, so that it would appear that they were answering or singing in parts. The country people are often awakened from their sound sleep by the notes of these birds; but they do not regret the disturbance, since, when the waters are frozen and the forests covered with snow, it prognosticates a thaw, which invariably follows in two or three days.

There are three different species of the Pelican (*Pelicanus carbo*) in Iceland, which nevertheless live together and have the same kind of walk. The following is the manner in which they are taken: in winter, when breakers accompanied by cold winds drive towards the coast opposite to where the sea is bounded by rocks, the pelicans proceed thither to find a shelter for the night; but the rocks being covered with hoar frost, are so slippery that they cannot stand on them, from which they endeavour to perch on the summits or to find some herbage, where they can rest. The inhabitants who watch for this period, then cautiously advance, provided with nets, which they throw with success wherever a flock of Pelicans has alighted. The Icelanders eat these birds, and many foreigners do the same, notwithstanding their fat is very strong, and their flesh has a fishy taste: the young birds, however, eat better, particularly if stript of their skin; and it is even asserted, that after this operation they are equal in flavour to the turkey.

FISH.

Whales are rarely seen in the Gulph of Kolle, or at least they are only of the smallest species; while in the Gulph of Havalfiord, which is five miles in length, by one in breadth, several kinds appear in spring, which are easily surrounded and driven on shore by pelting them with stones. The same takes place in the gulph of the western part of the island, where the inhabitants attack them in greater numbers. In the lakes of Heller and Kortolfetade, they take several kinds of salmon, which are tolerably abundant, and come into low water on the breaking up of the ice. In some seasons the sea-dog makes great havoc amongst the salmon, by watching for them at the mouth of the river.

BOATS OF THE FISHERMEN.

At Kialarnes, fishing lasts all the year; and the men employ boats or canoes, the largest of which only holds four persons, while the smallest will not contain more than one man; in the latter some risk is incurred, particularly in rough weather. These canoes are moved by the oar.

From different traditions, it is evident that similar canoes were used here in the earliest ages, with the exception that they were then longer and deeper, and that they required two men to work them, one at the prow and the other at the poop, each man using two oars. The inhabitants of Kialarnes use for their canoes sails, made of very fine wollen stuff, woven in the manner of linen. The peasantry wear shirts of the same article. Their boats have but one sail, which is a fourth narrower at top than at bottom: the masts are not all of the same height, but the general proportion is two-thirds of the length of the boat. There are no other particulars worthy of notice, except that, instead of an anchor, they use a stone like those of a mill, perforated in the middle, to contain a stake, through which a rope is passed to let it into the water.

Amongst the fish which they take, are the chub, the sole, and the thornback; from the liver of which last they extract an excellent oil. In spring and autumn they catch small soles with hooks made for the purpose; and it is remarkable, that this fish always comes near the shore, or at least within an eighth of a mile.

SHELL-FISH.

Of the different kinds of shell-fish found in the district of Kiosar, four are good to eat, two of which, being very scarce in other parts, we shall describe: the first is the *Concha ventricosa bivalvis, nec auriculata,* which is obtained on the

ebbing of the tide on sand-banks; but though this fish is eatable, they only use it as a bait. We attempted to convey a considerable number of these fish to Védoé, to ascertain if they could be transplanted to other districts, but our efforts did not succeed. We observed that it did not open its shell, unless attacked by different insects, that ate holes in its substance. Another remarkable circumstance was, that on hanging one of these shell-fish in an apartment that contained a fire, and which was at the same time exposed to the rays of the sun, we saw with surprise, that the fish continued alive for a fortnight, and only died when it had lost all its moisture, by which it fell into a state of putrefaction. In the western part of Iceland, the inhabitants eat this fish, which though rather tough, has a tolerably good taste.

Another shell-fish, which is very palatable and wholesome, though not used by the inhabitants, is the *Concha testa bivalvi oblonga, altera extremitate præmorsa, apertura patentissima, proboscide breviori conacea:* it abounds in the Havalfiord, where the shore is covered with its shells.

INSECTS.

There are very few insects on land; but the sea swarms with them. The Krabben is very common in this district, and is the same as is eaten in Denmark under a similar name: it is the common crab of Europe. The Icelanders are of opinion that it is good for nothing; but they are mistaken, for our travellers ate it several times, and found it remarkably good.

The *Lumbricus marinus*, or sea-worm, is very common on the claey shores of Iceland, and is the same as is used in Norway and at Deal for bait. The Hæmatopus hunts after this insect, and easily pulls it out with its long beak, though the worm frequently retires on the approach of the enemy to a considerable depth.

OF THE FORESTS.

Several Icelandic historians assert, that the district of Kiosar was so covered with wood at the time it began to be peopled, that the new colonists were obliged to clear a considerable space to build on. There is no doubt, that the forests here were at one time vast and numerous. It is reported, that in the canton of Born, a valley on this side of the mountains, and which was formerly an extensive wood, several very large trees were cut for ship-building, and that the first vessel made from them, took in a cargo of them for Norway, at the very dock at which it was built. The trees alluded to were said to be birch; but there is no doubt that oaks were likewise amongst them. We

shall speak in another part of the causes of devastation in the forests of Iceland.

FARTHER REMARKS ON THE TURF OF ICELAND.

The turf explored in this district, and which has been already spoken of, proves, that at one time there must have been many birch-trees in places where there is at present no appearance of wood. A great disruption of rocks, which took place some years ago at Esian, afforded an authentic proof that there was formerly a fine forest of birch-trees in this canton; and which is recorded in one of the ancient Danish histories. We saw with surprize, in a space exposed by this disruption, some fragments of birch, which shew that these trees must have been very large, much more so indeed than those in the forests of Housafall and Fnios Kadal, which are nevertheless the finest that exist in this country.

OF THE LAKE OF HIVALVATN.

The Hivalvatn is a lake of fresh water, which, according to tradition, takes its name from the carcase of a whale found there. But two well-informed persons assured us, that this said whale is nothing more than a rocky ridge covered with moss. We shall therefore be very cautious how we place it amongst the vestiges of the deluge, which various persons say they have observed in different parts of our globe.

However careful the Icelanders may have been to discover the remarkable events that have taken place in their country, and particularly the volcanic eruptions, there are still many which seem to have escaped them; though it is evident that they have occurred since the island has been inhabited. Amongst those which they have omitted, is the eruption that took place in 1340, in the chain of mountains that extends towards the south of Mosfell-Bygden, which has certainly suffered considerable shocks from subterraneous fires: they have been partly calcined and even removed from their ancient site. The annalsof Iceland make no mention of this circumstance.

FARTHER INTERESTING DETAILS RELATIVE TO THE INHABITANTS OF THIS COUNTRY.

There has existed from time immemorial, in the western part of Kialarnes, a house or kind of little manorial castle, near which are the ruins of a temple of idols. They are of opinion, that this temple was built about the year 888, in the time of Helge Biæla, the father of Ingolf, who was one of the first inhabitants of Iceland.

The manorial house, situated at the foot of the mountain of Esian, near Hof, belongs at present to the king. On observing that the first and finest idolatrous temple was built at Hof, and that the first bailiwick was established there, we must also remark, that at the same time Orlyger Stopson erected the first church at Esiuberg; he had been instructed in the Christian religion by St. Patrick, bishop of the southern isles; and when Orlyger separated from him, he presented him with the materials for building a church in Iceland. Knowing, however, that he could not find in Norway either priest or sacred ornaments, he made him a gift of consecrated ground for the support of the church, as well as of an iron bell, which gave rise to the following legend: It is said, that in the passage of the Gulph of Faxa it fell from the ship, but that by a kind of miracle it was thrown ashore in the environs of Esiuberg. Orlyger first landed at Patrick-Fiord, which is to the southward, and to which he gave its name in honour of the Bishop Patrick; but agreeably to the advice of this bishop, the church was dedicated to St. Collombyle, who is doubtless the same priest known by the name of Colomban, an Icelander, who converted the Picts to the Christian religion in 562. The descendants of Orlyger, who inhabited Esiuberg a long time after him, likewise became converts to Christianity, and considered Colomban as their tutelary saint.

CAVERN OF BAARD.

Most of the Icelanders look upon the cavern of Baard as a wonderful monument of antiquity; they relate that the giant or demi-god Baardour Snæfellsaas resided in it, and had meetings with other giants; but there are some, who pretend to be better informed, because neither the name of this giant, nor any of his actions are mentioned in their histories, though Jonsen and others had the weakness to print this fable as authentic at Holum, about the year 1750. We visited this cavern in the voyage that we undertook in 1755, and found it of a very considerable length and breadth, though only six or seven feet high. On the inside we observed a number of names and runic characters cut in the stone; but which nevertheless did not appear to be long since engraved; they did not therefore surprize us at all, as it is customary for travellers in Iceland and every where else, to amuse themselves with cutting their names, and the time of their journey, at places, whither they are led by curiosity, or the desire of witnessing wonders: and consequently they have left their marks on the barks of trees as well as on stones. This cavern serves at present as a stable for sheep, by which, on account of the gradual increase of dung and sand, its height is considerably diminished.

WESTERN QUARTER OF ICELAND.

Having noticed every thing of interest in the southern, our travellers arrived at the western quarter of Iceland, which is comprized under the name of Borgarfiord. It was spring when they intended to set off for this district; but the weather was so rigorous, that they could not use horses for travelling till towards the middle of summer. They at length arrived on the 1st August, in the jurisdiction or district of Borgar: this district is 14 Danish miles long from S. W. to N. E. that is, from the mouth of the Gulf of Borgar, on the point of Akranoes, to the land of Arnavatn, situated to the north of Fiskevatn. It is computed to be 8 miles in width in a direct line from the Gulf of Hval to the river of Hitar, and something more by the way of the mountains. The district is divided into two portions, one on each side of the river Hvit, and contains twenty parishes.

REMARKABLE MOUNTAINS.

This district is full of high and steep mountains, which mostly proceed from the grand chain that separates the northern from the southern part of Iceland, and from the tops of these may be discovered the different glaciers, of which that of Geitland only belongs to this quarter. All these mountains are considered as primitive, while those to the S. E. near Hvalfiord are regarded as secondary, and have greater analogy with that of Esiau, already mentioned. The Thyril is a summit that forms a round and very high peak, which is very steep towards the sea: it has received the name of Thyril, because the currents of air turn spirally round its top, and occasion furious whirlwinds, which take their direction from N. to N. W. and hence travellers are obliged to take the greatest precautions on approaching it. This mountain is formed of several horizontal strata; and its height is estimated at 1,800 feet: The highest of the other mountains cannot be much less than from 4000 to 5000 feet.

OF THE FORMATION OF NEW GLACIERS.

On passing on the 6th August, near the mountainous summit called Mofell, we perceived at its top a long extent of ice. On arriving at the nearest hamlet, we asked the peasants if the ice, which covered a part of the Mofell, did not melt in summer? They answered in the negative; and added, that, having been born and brought up in the country, they well remembered in their youth that there was not the least ice to be seen in those parts; but that having passed a few years in another quarter, they had found with surprize, on their return, the snow had accumulated, and from year to year they observed it to decrease less in summer. This part fronts the N. W. and we remarked,

that there were already crevices formed in the ice of a greenish colour, which proceeds from the rays of light breaking against them. Hence it appears, that the ice accumulates from time to time, and produces new glaciers on mountains of inconsiderable height, when cold winds blow regularly at certain periods every year, and when the nature of the soil is not inimical to their formation.

There is a mountain called the Baula, belonging to the white class*, and which is worthy of notice, on account of its extreme irregularity: it is very high and steep, and rises to a point. It may be seen at a great distance, and, in all probability, has been formed by subterraneous fires: the stones of which it is constituted, are mostly clear, and, as it were, inserted in each other, with the exception however of the rock that forms the summit, which is composed of a stony mass burnt to blackness. Amongst the ashes found at the bottom, and which have proceeded from eruptions, are black agates of various sizes.

There are several other mountains in this district, which deserve the attention of naturalists, particularly that of Wester Skardsheide, remarkable also for its irregular conformation: its rocks consist of stones changed into lava, which substance is replete with small crystals of spath and quartz, become brittle, yellow, and opaque; their form is various, which seems to shew, that they have been subjected to a violent heat. One might be inclined to think with Linnæus and other learned moderns, that these stones have been attacked and rounded by the action of the air and wind, or that they have been changed into a calcareous matter from a want of *succus mineralis*, or mineral juice. There are, however, many reasons for the opinion which we have given having a better foundation.

JOURNEY TO THE GLACIER OF GEITLAND.

We were induced to undertake this journey, because we had never before visited any glaciers; nor had we been able to procure any satisfactory information about them. We were also obliged to give our own opinion of these wonders, in order to conform to the express wish of the Academy. On arriving in sight of the glacier of Geitland, which overtops all the other mountains, we took an opportunity of satisfying our own curiosity, and fulfilling the orders imposed on us.

This glacier, which deserves to be classed amongst the mountains most irregular in their formation, furnished us with discoveries completely novel.

* By the white class, the authors mean those composed of gravel and argillaceous mould, which present a greyish appearance; in opposition to such as are of pumice-stone or lava, and which look blackish or red. Ed.

GENERAL OPINION OF THE INHABITANTS RESPECTING THIS GLACIER.

There is no Icelander, who does not know the Geitland, and who does not admire its wonderful construction, its masses of ice, and its extraordinary height, in which it surpasses all the other mountains. They likewise believe from ancient traditions and legends, that there is in the middle of this mountain a deep valley, embellished with beautiful meadows, and inhabited by a small body of unknown people, who are said to live with their flocks and cattle, and to be the descendants of banditti and giants. In the ancient books of Iceland, they are called the men of the woods, which fable owes its origin to a saga or history, in which it is said, that these giants inhabited the valley during winter. It states that at the period in question, that is to say, about the year 1026, there lived a herdsman named Thorir, who had two daughters, with whom the *Grettis* or giants got acquainted; that this valley, besides being ornamented with beautiful woods and meadows, has an abundance of fine sheep, which are of the largest size. The same passage adds, and with reason, that this valley can never be covered with ice; because there is at the bottom a strong heat and several hot springs. We shall not proceed any farther in relating the wonders reported of this valley: the circumstances that may be relied on, are very few, and these are founded only on vague relations communicated by those Icelanders, who had the courage to visit the mountain at different periods, and returned without any accident.

Messrs. Biœrnsen and Helge, two ecclesiastics of the country, examined this mountain and the valley of Thorir. We had an opportunity of procuring the history of their journey, which is written in an obscure style; but it is nevertheless authentic. They state that they arrived towards evening, but in delightful weather, at a large valley situated in this glacier: it was of such a depth, that they could not distinguish whether it was covered with grass or not; and the descent to it was so steep, that they were not able to go down, and consequently returned.

On the 9th of August, we set off from Reykholtzdal on our way to the glacier of Geitland: our object was not to discover a region, or inhabitants different from those we had quitted, but our journey was to observe the glacier with the most scrupulous accuracy, and thus to procure new intelligence relative to the construction of this wonderful edifice of nature. The weather was so fine, and the sky so clear, that we had reason to expect we should accomplish our object according to our wish; but it is necessary to state, that in a short time the glaciers draw towards them the fogs and clouds that are near, that

is, within the distance of ten miles. In the morning we crossed the valley of Reykholtz, the bottom of which abounds in hot springs, and exhales a subterraneous heat. In the whole of this neighbourhood, there were evident marks of slight eruptions, the pasturages being in many parts destroyed and covered with scoria, while such spots, as have not been subjected to the action of the fire, present eminences abounding with herbage. The soil, even in the parts that have been attacked by the fire, is nevertheless covered with birch-wood and shrubs, a variety which renders it very agreeable.

On the 10th August, in the morning, the air was calm, but the atmosphere was so loaded with fog, that at times the glacier was not perceptible. About 11 o'clock, however, it cleared up, and we continued our journey from the village of Karlsmarunge.

The high mountains of Iceland generally rise in gradations, so that on approaching them, you discover only the nearest elevation, or that whose summit forms the first projection; on reaching this, you clear a similar height and arrive at the next, and so pass over successive elevations till you reach the summit of the ridge. In the glaciers, these projections generally commence in the highest parts, and may be discovered at a distance, because they overtop those mountains that do not form the glaciers themselves. This journey afforded us ample room for observation: and we remarked, that here the lowest mass of rocks was also the strongest. On attaining the first elevation, we perceived that the grass and plants became more scarce; and on advancing the eighth of a mile farther, they were no longer to be seen; there was even a want of soil, and on arriving a little higher, we found nothing but barren rocks and stony ruins, which were no where susceptible of fertility.

We now found, that it was much farther to the glacier than we had imagined; and at length reached a file of rocks, which, without forming steps or gradations at the part where we ascended, were of a considerable height and very steep. These rocks extend to a great distance, and appear to make a circumvallation around the glacier; for we perceived their continuance as far as the eye could reach. Between this file of rocks and the glacier, there is a small plain about a quarter of a mile in width, the soil of which is clayey, and exposes neither pebbles nor flakes of ice, because the waters that continually flow from the glacier, carry them off. On advancing a little farther, we discovered to the right a lake situated at one of the angles of the glacier; the banks of which were covered with ice, and the bed received a part of the waters that ran from the mountain. The water appeared entirely green, a colour it acquired by the

rays of the light that broke against the ice. After many turnings and windings, we found a path by which we could descend with our horses into the valley; on arriving there, we met with another embarrassment, as well in crossing a rivulet formed by discharges from the lake, as in passing the muddy soil, in which our horses often sunk up to the chest. In some parts, this soil is very dangerous to travellers, many of whom have perished in it from the depth to which they have sunk.

VIEW FROM THE TOP OF THE GEITLAND.

Our object was at length attained; for we arrived at the Geitland, but found it a very disagreeable place. We discovered a mountainous peak rising above the ice, and which, as well as the other mountains, has been formed by subterraneous fires. We led our horses across the rocks, and as high as we could go over the masses of ice, after which we left them, and travelled the remainder of the way on foot. The leather employed in Iceland for the soles of shoes, is not so pliable as that used for the same purpose in other countries: we, in consequence, took the precaution of providing sticks with strong iron points, for supporting ourselves upon the ice. The Icelanders always use these sticks in winter, in passing the ice and congealed snow: the stick is two ells long, and the iron point about half a quarter of an ell. We likewise procured a long and strong rope to give assistance to such as might fall into a hole, or sink beneath the snow; and we had a compass which we considered to be indispensable, as well for guiding us, as to observe, whether at so considerable a height there was any declination in the needle. Thus prepared, we began to escalade the glacier at two o'clock in the afternoon: the air was loaded with a thick fog, which covered the whole mountain; but hoping that it would disperse, we continued our dangerous and troublesome route, though at every instant we had to pass deep ravines, one of which was an ell and a half in width, and which required the greatest precaution to cross it.

We soon convinced ourselves, that the clefts or ravines which we met with, do not, as is generally supposed, proceed from the enormous weight of the ice and the extreme cold that prevails in winter, or from the compressed air, that causes the rocks to split; but rather from the thawed waters which form small rivulets on the glaciers, and by gradually running, excavate ravines in the ice, which in time acquire a greater depth, insomuch that most of them are twenty fathoms deep: while there are some, which it is impossible to sound. On this subject we made the following observations. There are none of these ravines on the summits of the glacier, but only where the ice has col-

lected in large quantities, and where the rain and thaw-water most frequently run. These ravines have not an equal direction either with the longitude or latitude of the glacier, and do not depart from a fixed point, either where the soil which is below the ice might be more elevated, or where the force of the air might be supposed to have a greater action. These ravines are larger and more numerous towards the foot of the glacier, where one might expect to find them smallest, and in less number than towards the top: the deeper they are, the more narrow they are; while, in general, they are wider at top than at bottom. We saw water running in the little ravines, while we only heard a strong murmur of the water falling into the greater near their mouths. The banks of these ditches are covered with sand and ashes, left by the water, when it has overflowed.

SUMMIT OF THE GLACIER.

On approaching this point, we found the wind much stronger, and the flakes of snow larger and more abundant; fortunately, we had the wind in our backs, which facilitated our ascent; but we met at the same time with heaps of snow, which rendered our progress difficult. Hoping, however, that the weather would change, we agreed not to return till we had gained the summit, from which arose a black rock, that we could perceive at intervals. At length, after travelling two hours, we found that we had made no additional observations, since we could discover nothing in the distance. A file of burnt rocks, but of inconsiderable height, rose above the ice, and at these we stopped to rest. The flakes of snow obscured the air so much, that we hardly knew how we should get back: we examined the compass, but without observing either variation or declination; and we were prevented by our guides from going towards the N. W. where the mountain is highest and least accessible. The weather continued the same on the Geitland, so that we found it impossible to resist much longer the intemperature of the air, and deemed it prudent to return. Although the sky was very heavy and dark, we discovered, on retrograding, the entrance to a valley; if the weather had been more favourable, we should doubtless have had the pleasure of observing the scite of these environs; but we doubt whether we should have discovered the valley of Thoris. As we descended, we found the wind in our face, which threw the snow so much against us, that we could not observe the traces we left on ascending; and it therefore only remained for us to take the road that was least steep. By this means we again met with ravines, which rendered our descent very dangerous, because they were from three to to three ells and a half wide, while the soil that separated them

was very uneven; insomuch that we were obliged to go often out of our way, or to run the risk of being precipitated to the bottom.

PYRAMIDS.

We here observed two very remarkable particularities; the first is, that the sand has accumulated upon the ice of the mountain in round and black pyramids, in the shape of a sugar-loaf. They are of such a regular figure, that they appear as if the sand had been placed by art. These conical elevations are from four to sixteen feet in height, and are only a few paces distant from each other: while their shape is that of a steep ridge, from which rise others, each being smaller than the one that precedes it. In some places they are not so regular as in others, but particularly where we began to escalade the glacier; because the sand, by being conveyed over the glaciers, mostly falls in them. It is justly supposed, that it is not possible for the sand to remain heaped in this manner, but that these heaps may preserve their form till it is altered by the imbibition of moisture. On pushing our pikes into these pyramids, we ascertained, that their newel, or interior mass, was principally composed of ice. In the first which we examined, the mass that formed its base had given way, or more properly speaking, had been dissolved by the water that ran off from its summit; for in this, as well as in most of the others, we observed a sort of gutter or trench.

It is well known, that on the glaciers the greatest quantity of snow falls in winter, and that the winds convey thither the sand and dust from the adjacent mountains, which are generally covered with this substance. Experience has at the same time proved, that the high mountains and particularly the glaciers attract the air towards them, and with it whatever it may envelope: this sand, which moves about like waves, accumulates by falling in the lowest places upon the heaps of snow, and to four or five feet in height on the ice of the mountain. In spring the snow melts by the action of the rain or the sun; and the thawed water meeting in its course with a mass of snow or sand, increases in the parts where such mass is most abundant, till it form a lake. The great masses being, on the contrary, more compact from their weight, resist these thawed waters, and retain the sand which covers them, so that they suffer but little from the influence of the air. It should also be observed, that the snow which forms them, entirely absorbs the water, which in the night freezes again; for though in summer the air be very clear during the day, and the sun very brilliant, it freezes

on the glaciers every night. Hence the masses in question being covered with sand, as is already observed, the rays of the sun act but little upon them in the day-time, so that the small solution they undergo externally, serves, after the frost that occurs at night, only to render the sand that covers them, more even, or to form it into a more compact mass with the snow. Thus the currents of air whirling round these little eminences, and acting from their base up to their summit, form, from the heaps of sand and ice, the we have been describing.

HOLES FORMED AMONGST THE ICY EMINENCES.

We were very much surprized to find amongst these pyramids, several holes formed in the ice, most of which were about a foot in diameter, though some were two or three feet; several of these were so deep that we could not find their bottom, in consequence perhaps, of their running obliquely: they were filled with a very cold and limpid water. It is perhaps more difficult to define the origin of these holes, than that of the pyramids; but we may, with tolerable certainty, attribute them partly to small strata of ice heaped on each other, having given way to the action of the waters and the air.

The ice is generally more or less full of holes, because in proportion as the water freezes, the air concentrates within it, and accumulates in the form of bulbs, round or oblong, some of which are even six inches in diameter, while others are so small as to be almost imperceptible, though very numerous. The ice which is formed on the rivulets and lakes of fresh water, is filled in spring with such a multitude of these holes, that it appears like a sponge, in consequence of the water and air bursting at the surface by the elasticity they acquire. Hence the largest holes appear in places, where the ice has had more vesicles collected together. That ice which arises on the sea and at Greenland, approaches in its quality very near to that of the glaciers, as well in its colour as in its compactness and specific gravity. The water also which the latter contains, possesses the same limpidity, and has a taste equally agreeable, as that of the glaciers; we consequently are of opinion, that what has been said relative to the formation of the bladders or bubbles, applies likewise to those of the sea and Greenland. We must, nevertheless, observe, that, though the ice of the glaciers be hard and compact, it contains much less extraneous matter, than that which is formed in other parts; because the latter is mixed internally with particles of earth, sand, and small stones, conveyed by the wind and rain from the neighbouring pastures.

We at length quitted this dreadful region, in which we had

been exposed to so many dangers: we soon gained the foot of the mountain without sustaining any great fatigue or embarrassment, and arrived at the spot where we had left our attendants; who informed us, that while we were on the mountains they had not felt any strong wind, but had been incommoded by a drizzling rain, while the glacier was incessantly covered with fog. This proves, that the atmosphere of vallies is very different from that of high mountains.

RAMPART OF STONES ON THE BORDER OF THE GLACIER.

Along the file of ice extending from the Geitland, we found a rampart consisting of ruins of pumice-stone, and other rocky particles of various sizes; and we also remarked in it some large masses of stone which eight men could scarcely move. This rampart is more than sixty feet in height, and runs along at a few paces from the file of icy flakes already mentioned.

This singular arrangement of nature struck us in a forcible manner; our observations induced us to think, that this accumulation had proceeded from the base of the glacier, and that it could only have been formed by some extraordinary shock. One idea is founded on the following circumstances: first, it clearly appears, that this chain of ice has been broken longitudinally, since in the other glaciers it is found at the foot of the mountains, where it forms a slope, so that one can ascend without difficulty. Secondly, because in every part of the glacier we discovered falls of water, and small rivulets; and that towards the bottom, where the ice is not very thick, we perceived them through the clefts in that substance, while near the top, where the ice is much stronger, and the clefts are more contracted, we could only hear the murmuring of the water. These springs take their course at the kind of rampart just mentioned; but it is not possible that they can proceed towards the lake of fresh water in the neighbourhood of the glacier, and from which a river takes its source. Thirdly, we rest our opinion on the circumstance, that the stones which form the rampart, are rounded and polished by the water, particularly those of a small size. Hence from what we have said, it may be presumed, that this quantity of stones and ruins has been conveyed successively from the foot of the glacier by continual falls of water. The glacier itself is constituted of rocky substances burnt and thrown together without order, and the summits of which rise considerably above the icy fragments. The waters are formed from subterraneous drains beneath the rampart, while at the time when the chain of ice descended as far as the foot of the mountain, their current must neces-

sarily have run from above and over that chain. A large portion of the base having, however, disappeared, it caused a vast space between it and the ice, which not being able to sustain its weight for any time, must necessarily have submitted to a disruption; the falling matter stopt the waters, which afterwards taking their course along the rampart, sunk and carried the icy fragments along with them, from which has been formed the space between the rampart and the chain of ice.

To these same causes may be partly attributed the wonderful changes, which in the opinion of the inhabitants of the country have taken place in the other glaciers, and particularly in those to the eastward. They report, that in certain times their border or base extends as far as the plains or level country, while in other parts it retires or disappears precipitately or imperceptibly.

Finding the night advancing upon us rapidly, we proceeded on our journey, as we had a long and very difficult route to reach the village. In our way, we observed that the soil in various parts of this district differed materially, and that most of the plains were of a swampy nature.

OF THERMAL WATERS OR HOT SPRINGS.

It is a matter of surprise, that learned Europeans have hitherto said nothing of the Thermal springs that abound in Iceland; and it would still be more remarkable, if we were to suppose them unacquainted with their existence; for there is no country where such springs are more numerous. We shall first mention the springs and hot-baths in the district of Borgarfiord, in the vicinity of the river Leyr. That of Hver is not the least considerable; for its waters boil, but not in sufficient strength to rise in globules; they have what our hydraulogists and mineralogists call the "*vim incrustandi*," that is, that the particles they throw up, by striking against the rocks and stones above the water, attach to them and form a kind of white and hard crust very similar to gypsum. This crust is composed of small, round, worm-like particles, generated by the drops of water that separate from each other, after the rocks in question have been moistened; and thus they depose the sediment they contain. On seeing a piece of this crust, it may be mistaken for Iceland coral deprived of its ramifications or branches: the substance of this crust is by no means calcareous, as has hitherto been supposed; and it caues no effervescence either with the acidulated waters, or with aquafortis.

There is another small thermal spring at a little distance from that of Hver; its basin is in the form of a cauldron, and its border is covered with grass and concretions, or stalactites,

on which six or eight persons may sit, or the spot may be covered with a tent. In its vicinity is a kind of rampart or shed raised of earth for the convenience of persons who come to bathe. There is formed on the surface a quantity of thermal cream, which renders it necessary to skim the water each time that a person bathes. This spring is of a mild temperature and very wholesome. There are several other springs of a similar nature, but they are not deserving of particular mention, if we except that of Tungu, which is situated on the left at the entrance of the valley, and is remarkable for its heat, as well as for the abundance and strength of its waters. Their basin is composed of a bole earth and the bottom consists of rocks: in these there are four apertures, from which the water issues with such a noise, that those who are near it, cannot hear even when they halloo in each others ears. These boiling springs rise in fountains to the height of three or four ells; and after being propelled for a few minutes, they stop for an equal space. And this operation successively occurs in the second, third, or fourth openings. The people in the vicinity collect this water for cooking, washing, and other domestic uses; that which flows over the reservoir, runs into the river, and communicates to it a gentle temperature.

With respect to the advantages of these hot springs, the inhabitants find them considerable; they serve as ley for steeping their cloaths. They boil in them, as in a sand-bath, their milk, vegetables, eggs, and most of their food, which is soon and nicely cooked, without acquiring any unpalatable flavour; though it should be observed, that they take care to keep the utensils closely covered: by this means they save much fire. By steeping wood in this water, it acquires the pliancy necessary for making barrel-hoops. It produces the same effect upon bones; and there are some springs in the valley of Reykholtz, which give to the horns of sheep and other cattle, the same flexibility as whalebone. It is also worth notice, that in some of the thermal springs of Iceland, bones lose their polish and natural colour, and appear as if they were calcined by fire: but this happens only in such as possess a strong degree of heat. It would require a particular treatise, to enter into details on the medical properties of these waters, which have already been described by other writers. We only had occasion to make two simple experiments on these waters; one with an infusion of salt of tartar, and the other with syrup of violets, neither of which produced the least change. They are extremely wholesome, either for bathing or for drinking, particularly after much fatigue.

OLAFSEN.]

VARIATIONS PRODUCED IN THE TEMPERATURE OF THE AIR IN WINTER BY THE THERMAL SPRINGS.

The extraordinary changes in the air in the district of Borgarfiord, may be considered as phenomena, but they are only occasioned by the multitude of hot-baths or thermal springs, which exist in that quarter. These changes are particularly remarkable in the valley of Reykholtz, where the interior of the soil, as well in winter as in summer, retains a permanent heat, so that the surface never freezes, an admirable advantage for cattle. The smoke and continual vapours that rise in the air, occasion many showers, that fall even during the finest sunshine, but they do not last long, as they proceed only from clouds that have been precipitately formed: such showers, however, merely proceed from the lightness of the atmosphere; for the more condensed vapours, which cannot rise so high as the smoke, fall in such abundance, that the herbage and plants are loaded with large drops of water to the extent of twenty paces in circumference, even during the prevalence of sunshine and winds, and this more or less according to the size or circumference of the thermal springs. On approaching these spots, one's hair and clothes become perfectly white, as if covered with hoar frost, and shortly after they are quite wet.

In the hottest part of summer, no peasants or labourers are to be found in the fields, as they remain in shady spots or within their houses: they work only in the morning and evening; and when the nights are clear in harvest time, they employ themselves in getting in their crops. This method of living is customary throughout the country.

Our travellers now enter into very minute and dry descriptions of various kinds of stones, earth, and fossils, which, we should think, cannot excite the smallest interest in the mind of any reader, except the lapidary and mineralogist. They are also very diffuse in their description of the plants in this district, amongst which we find the following particulars of the

PREPARATION OF THE LICHEN ISLANDICUS*.

We read in the Memoirs of the Academy of Sciences at Stockholm, for the year 1739 and 1744, that the Icelanders prepared a bread from this moss. Although we have not been able to procure sufficient authority for this assertion, we do not doubt its possibility, if a little flour were added to the composition, as we have made the experiment ourselves. But the

* A vegetable which has lately been introduced to this country, and employed with considerable success in pulmonary consumptions.

most common preparation of this moss, is to make it into gruel, after steeping it in cold water for a day; because this process extracts from it a very disagreeable kind of bitter. On taking it from the water, and leaving it to drain, it is boiled in skimmed-milk to the consistence of a jelly, which is eaten either quite hot with butter, or cold with curdled milk. Sometimes after steeping it, they chop it up, and at others leave it to dry before the fire, or in the rays of the sun; after which they reduce it to powder with a kind of mallet, and then boil it in milk, by which they obtain a very agreeable dish, very nourishing, and easy of digestion.

The salutary properties of this moss are known. Borrichius, who calls it *Muscus catharticus*, is mistaken in attributing to it a purgative quality, for experience has proved the contrary, and the utmost it can be said to do in this respect, is to keep the body gently open. Linnæus expresses a doubt, whether this lichen affords a good nutriment to the Laplanders, who use it daily; we can assert, that we have constantly seen it eaten by the inhabitants of this country, have eaten it ourselves, and have not discovered that it possessed the least cathartic property. This lichen is, however, the most salutary food that can be given to persons attacked with consumption and other diseases of the breast: it is easy of digestion, and consequently very good for weak stomachs which cannot support heavy aliment. In the southern part of the island, we saw a woman attacked with a violent diarrhœa, which could not be cured, till she had recourse to this moss. We shall only add, that it is a very good nutriment for those who attend to hard labour. It is used by the inhabitants for imparting a yellow dye to woollen cloths.

OF PLANTS AND SHRUBS.

The principal plants and shrubs in this district, are *Lichenoides Eryngii folia referens, &c. coralloides*; *Lichen Niveus*; *Lichen leprosus*; *Cochlearia*; *Rhodiola*; *Geranium sylvaticum*; *Vaccinium baccis farinaceis rubris*; *Spiræa ulmaria*; *Saxifraga autumnalis*; *Plantago latifolia (officinarum)*; *Monophyllum*; *Muscus cunarum*; *Cotiladon palustre*; *Papaper Alpinum*; *Epilobium angustifolium*; *Orchis, flore albo*; *Glaux maritima*; *Betula erecta*; *Betula procumbens*; *Betula nana*; *Sorbus aucuparia*; *Sorbus pumila*; *Arbutus (uva ursi)*; *Vaccinium (uliginosum)*; *Vaccinium myrtillus*; *Empetrum nigrum Bauhini*; *Salix Alpina glauca*; *Salix arbuscula*; *Salix incubacea*; *Salix repens*; *Salix Pyrolæ facie*; *Lycopodium (Selago, Fl. Sv.* 857); *Lycopodium selaginoides*; *Lycopodium digitatum*; *Sphagnum ramis reflexis*; *Muscus ursinus*.

REMARKS ON THE INHABITANTS OF THIS DISTRICT.

An idea of the conformation and constitution of the inhabitants of the district of Borgarfiord, may be easily conceived from what has been said relative to its scite, temperature and soil. This part of Iceland presents a variegated picture of plains and hills, mountains and vallies intersected by rivers, brooks, and springs of fresh and mineral water, as well as thermal fountains. The inhabitants of this quarter are mostly of a middling size, but in general strong, robust, and ruddy: it cannot be said that they are subject to endemical diseases. One very seldom meets with a person attacked with leprosy, while this disease is very prevalent in the southern part of the island. Diseases of the breast are also vere rare; but, on the other hand, epidemical and catarrhal fevers are frequent in spring and autumn.

In their moral character they are vivacious, laborious, and careful; they are excellent economists, and are very clean in their apartments and clothes. Their houses are of the same kind as those in other parts of Iceland, except that they are higher, larger, and more regularly built; and each house generally has attached to it a hovel or barn, well formed and inclosed, and which serves as a magazine for their provisions or fish. They have also another out-house, which holds their harness, cords, saddles, and accoutrements of various kinds; while the horses and other cattle which they keep, require four or five stables for their accommodation, which are mostly built in a line. The peasantry, who are in easy circumstances, commonly have another building, separate from their residence, and in which are beds, tables, and benches, for the accommodation of visitors. To this edifice the master of the house generally retires in summer, because it is more cool and agreeable.

The ancient inhabitants of this island knew how to estimate the advantages of these summer-houses, or cabins, which were nothing more than their cow-houses and ox-stalls. As they passed the summer in them with all their family, they took pains to build them well, and render them capacious; and in the summer season, their winter habitations remained vacant, or only one or two persons were kept to guard them: it, however, appears, that this feeble guard was sufficient to secure them from banditti, since in their ancient sagas or histories, mention is only made of two assassinations committed in this district during the eleventh century.

In their food the people of this district are more orderly and economical than those in the south; though the articles of nutriment are not materially different. They have abundance of milk, fish, and butter. Their occupations likewise are so

similar to those in the preceding district, as to be unworthy of a specific comparison. The inhabitants of this district have not much occasion for amusements to dispel melancholy; nor are they addicted to the drinking of spirits, which prevails amongst all the inhabitants of the coasts. The amusements of the youths are throwing the bar, and wrestling, when they meet on Sundays, or when they are conducting cattle to the field. In former times the higher classes of society amused themselves with such exercises; but this is no longer the case. At present their greatest recreation is the reading of histories, when they assemble in winter evenings, or when the snow and strong winds prevent them from quitting their houses. These recitations enable them to speak their language with much greater purity, than the inhabitants of the coasts. They, nevertheless, amuse themselves with games at cards, chess, and draughts, and have a peculiar manner of playing that last mentioned; they play it without men, and blindfolded, while reciting an ancient song, during which the spectators observe the most profound silence.

OF THE PECULIAR INSTINCT OF THE HORSES IN THIS DISTRICT.

In the district of Borgarfiord horses are very numerous, each peasant having ten or twelve, while others possess from twenty to thirty, including those for riding; every man in easy circumstances having on an average three or four for this purpose amongst his family. These animals are of different sizes; but they generally have large bones, and are admirably adapted for sustaining fatigue. A labouring horse is capable of carrying from 300—350 pounds weight; while the more robust will carry four cwt. and upwards, for five or six miles*.

It is not possible to find animals with a greater degree of instinct than the horses in Iceland; and of this they incessantly afford unequivocal proofs: they pass in the darkest nights through deep snows and amidst hurricanes and rains, over the most circuitous paths of the mountains, rocks, and vallies, without making a false step, and this even in parts where there are no paths traced out, and which are covered with snow and ice. When the rider thinks he has gone astray, and knows not whither to turn to the right or left, he need only throw the bridle on the horse's neck and suffer him to take his own course, when he may

* The editor presumes that the measures and weights expressed in various parts of this work, are calculated upon the standard used in Denmark. As he possesses no means of ascertaining, with correctness, the comparative difference of the Danish and English standard, he shall leave this point to the decision of his scientific readers; it being in his own opinion, a matter of very little importance.

be certain that he will bring him to his residence, but particularly if it be an old horse accustomed to travel. The peasants are superstitious enough to believe that their horses can see, in the dark, spectres and evil spirits; and the reason of this absurd idea is, because these animals when travelling in the dark, often shew little caprices, such as stopping short when in full gallop, rearing, and refusing to go forward even in spite of the whip. When it is necessary to pass marshes or other dangerous places, they advance with all possible prudence, and some are so active, that they will leap over parts with their rider or burden, in which others will sink, that it requires the greatest difficulty to get them out. On arriving near a swampy place which they are obliged to cross, they first stop, and smell the ground, as if they would sound its depth; after which they either venture on it, or turn back: in the latter case no chastisement will force them to go forward; and if by chance one of them should be compelled to enter the swamp, it may be relied on that he will sink in. When this happens to a horse, he loses his courage for the remainder of the journey, and darts into all the marshes that he meets with, notwithstanding others that may have gone before him, leave the traces of their route and pass without difficulty. We have ourselves had experience how disagreeable and wearisome these roads are, from the number of swamps and marshes they contain; and we should not make a proper conclusion, if we did not relate some of the wonders which the ancient inhabitants have transmitted relative to the instinct of their horses. It is said, that some of them will swim over the largest rivers, either with their rider or a very heavy burden; though they admit, that they do not try such experiments, except on the most pressing exigencies. They also add, that their horses have been known to pass in mild weather over the gulphs of sea-water, which are upwards of a mile wide, and to rest at intervals on the shore. It is certain and well known, that the horse swims well; but we never saw any that crossed a river with such ease as those of the eastern part of the country. Some of these horses sell for four rix dollars, and others for as much as eight or ten; but the last price is seldom given.

In the district of Borgarfiord, the meanest peasant has six or eight cows, as well as a bull and some oxen. They castrate the calves, when they are eight days old; while such bulls, as they intend to convert into oxen, do not undergo the operation till after three years, at which period they run the risk of perishing; and the former are much more adapted to fattening than the latter, though they are smaller and not so strong. In summer the inhabitants of this district turn out their cattle to the pasture in the open country, where they become very wild,

and often dangerous to travellers. There is an ancient law, which expressly commands farmers to keep in summer their bulls within inclosures, and which makes the owners responsible for any damage that these animals may occasion, as well as for the injury they may do to cows with calf. When they fatten their oxen, they feed them upon hay of the best quality and finest scent, taking care, that it is not heated, and often cutting it into chaff. They feed them in the stable; and on fattening young calves, they first give them pure milk, afterwards milk and water, and lastly skim-milk.

With respect to their management of sheep and other cattle, there is nothing particularly worthy of notice. In the lambing-season, which takes place about the middle of May, they keep the sheep in stables near the houses, till they have recovered; but the lambs require the greatest care to secure them from the attacks of wolves, foxes, ravens, and eagles. The eagle in particular, is their most dangerous enemy, and the greatest precaution is necessary to protect the lambs from its violence, because it hovers at a great height in the air, till an opportunity offers for darting on its prey. As it suddenly falls upon the animal, in an oblique direction, and fixing its talons in its reins, flies off with it to a distance. The best method adopted by the shepherds, is to light fires in the fields of horn, wool, and other fetid substances, in order to prevent the eagles from hovering in the air. When a lamb is so weak as not to be able to follow its mother, or when the dam has not milk enough to rear it, they take it into the house, and feed it on the milk of another sheep or a cow, by means of a quill covered with leather to resemble a teat. When a sheep loses its lamb the shepherd adopts a singular piece of artifice; he places the sheep in a dark stall, and taking a lamb from another sheep which has yeaned more than one, he puts it to her, when it generally happens that she adopts it, without farther formality; but if the contrary, he skins the dead lamb, and puts the skin over the one intended as a substitute. If this last attempt do not succeed, they hold a lamb near the sheep, and force it to suck.

They milk the sheep like cows, regularly twice in twenty-four hours, and some of them afford a very considerable quantity: the milk is made into butter and cheese, or it is eaten in various ways.

The Icelanders do not shear their sheep, but let the wool fall off spontaneously, which occurs in spring when the atmosphere begins to be warm. The first wool of these sheep is fine and short, but at the beginning of winter, it becomes hard, long, and knotty: it is used at Copenhagen for making garters of various colours, where the greatest connoisseurs are deceived by

taking it for camel-hair, particularly when the wool is mixed with a portion of goat's hair, which renders it soft, fine, and preferable to that of Zealand. The manufacturers at Copenhagen have long made a mystery of this composition, and they procure the materials from the Wool-Company of Iceland at a very low price. If we reflect on the care of the Supreme Being for the preservation of every thing that exists in nature, we shall see the reason, why the sheep in Iceland cannot be sheared. Their wool being frizzled, rough, and matted, will not easily absorb moisture, so that it serves them as a constant cloak; hence, if they were to be sheared, it would be necessary to keep them all the winter in the stable. They lose their wool towards the end of May, when it all separates from the skin, which is immediately covered with new tufted bunches. When these sheep shed their wool in cold weather, they are liable to take cold, in which case the shepherds fix round their bellies some pieces of woollen cloth. In Iceland, there are frequently to be seen vast spots of rocky ground covered with grass, at a good distance from the villages, exclusive of the pastures already mentioned. To these grounds the inhabitants send the sheep, oxen, and horses, which they intend to fatten: as for the cows, ewes, and saddle-horses, they are generally kept near the house, or in the adjoining pastures.

A JOURNEY TO THE MOUNTAINS.

The same body of men collected for the purpose of driving the herds to the mountains, is also formed towards autumn to bring them back. This last period is generally about a fortnight or three weeks after Michaelmas: they carry with them horses and dogs, a stock of provisions, shoes, and other necessaries; and each troop or body, agrees upon the distance they shall go to bring the cattle to a certain spot, whither they return with all they can collect.

The navigators who frequent the ports of Iceland, at which a trade is carried on with sheep, lately agreed with the Commercial Company, to change the period at which they were accustomed to turn the cattle out to graze; because when the vessels arrived, they were obliged to remain to the middle of October, and the result was, that the sellers agreed to deliver the sheep one month earlier than usual, which obliged the peasant who wished to sell his cattle, to come so much earlier to the ports. It may be easily perceived, how disadvantageous this innovation must have been to the owner, as well as to the agent and purchaser, the tax on poundage being always the same.

Hence the farmers were obliged to drive their sheep from the pasture before they were properly fattened, and afterwards to

keep them together for some time, before they could be sent to their stalls, where they had scarcely rested, till they had to perform a long and tedious journey to reach the markets, which reduced them to one half of their value while at pasture. It has been ascertained by experience, that the first two days' journey emaciates them very considerably, insomuch, that a fat sheep which has ten pounds of suet, loses half a pound a day while on the journey; so that when they arrive at the ports, they do not fetch a price at all proportionate to their former value.

It is worthy of remark, that fresh grass in Iceland generally induces a diarrhœa in sheep, particularly in moist pastures, which often cause their death. This disease is principally attributed to the marsh trefoil; and they use to cure it the *Album græcum* in powder, which is given to the animals in milk, either fresh or skimmed. The sheep are also subject to the tænia or tape-worm, which fixes to the intestines and occasions diarrhœa, and which they destroy by giving to the animal the powder of birch charcoal. In this country, the sheep and cows are also afflicted with a very severe swelling of the udder and belly, which makes them very ill: the cows in particular at this time cannot be milked, and the disease often causes the death of the animal. The common people attribute this malady to subterraneous spirits, who come at night, and suck the dug of the animal, or draw the milk, to make butter; others attribute it to a little bird, which we learned was the *Motacilla œnanthe*, which picks the teats of these animals. There are several other diseases incidental to cattle, which are peculiar to these districts, and consequently not deserving particular notice.

FOXES.

The number of cattle here attract whole herds of foxes, which the inhabitants endeavour to destroy by every possible means. They hunt them principally in winter, and some use guns, while others catch them in snares, or in their earths. When they find a fox-hole, one of the hunters conceals himself near it with a gun, and watches for the fox, always killing the male in preference to the female; because the latter is more easily taken, though she remains almost always in her kennel. But if on the contrary, they kill the female first, the male and the young ones collect in the earth, and can only be expelled by hunger, besides which, when the male is away from the earth, he always approaches it with the greatest precaution. The hunter frequently takes the litter of foxes by opening the ground, and preserves one of them alive, which he pinches to make it cry, and this induces the male, as it were by instinct, to approach the hole. When they cannot succeed in driving either the young or old

foxes from the holes, they light a fire at the entrance so as to cause the smoak to enter, and suffocate the litter; but this is not the case with the old ones, who are cunning enough to approach to a corner at which the fire is weakest, and respire without being seen. Hence a hunter is often obliged to remain three or four days about a hole, before he can make the fox appear; but the inhabitants of all the neighbouring villages make a point of supplying him with victuals; and if he kill a litter of foxes, he receives a reward of half a rix-dollar. In winter, as many people go in chace of the fox as may please; but the only recompence they obtain, is the skins of those they may kill, which always sell for a certain price. In some years, the king has granted a premium to such individuals as may bring ten fox skins to the merchants, which is certainly a very good method of effecting the destruction of those animals. A circumstance which proves the sagacity and cunning of the fox is, that when he is taken by a paw or the tail in the iron traps laid for him in winter amongst the snow, he bites off the part which is held in the trap; most foxes, however, are taken by the *Nux vomica,* which is made into cakes with butter or stale meat, others catch them by a line, to which are affixed several hooks concealed in the centre of a piece of meat, so small that the animals can swallow it.

MICE.

There is but a small number of mice in Iceland, and the white mouse of the woods *(Mus sylvaticus)* appears to be only a variety of the domestic mouse. The instinct of this little animal induces it to collect a quantity of grain for its winter provender; and its magazines may be frequently discovered in the woods and outskirts. We were assured, that these mice undertake long journies, and even cross rivers, on which occasion they have the sagacity to pass the water in a diagonal line: they use pieces of dry cow-dung for rafts, which they load with grain on their return. The number attached to one of these rafts, is from four to ten, and each of them assists in launching it. It is also curious, that they swim on each side, and their faces are opposite, while their tails serve for rudders. These voyages are not always successful, for sometimes their boats sink, when they save themselves by swimming with wonderful ingenuity. These curious circumstances were detailed to us by persons of credit, who had had ocular demonstration of the fact.

In the western quarter of this country, are the same species of animals and birds as in the south. Seals or sea-dogs are very numerous, and are often killed by the country people, by striking them on the head with sticks, and afterwards cutting their throats: these animals, we ascertained, to have bones in their legs, though

Mr. Anderson has asserted the contrary. The only domestic birds here, are a few hens, as the scarcity of grain will not allow them their maintenance.

SWANS.

The environs of the gulf of Borgar are filled with swans, which resort thither on account of the numerous marshes. They collect and remain in a space of the country from eight to ten miles long, and three or four broad, consisting mostly of swampy spots and lakes of fresh water. Here in August they shed their plumage, and the inhabitants take great pains to collect the feathers, and catch the swans; young as well as old people availing themselves of the time when they cannot fly. In spring also, when they begin to lay, the inhabitants collect the eggs. On hunting the swan, they repair on horseback, but on this occasion, they make use of strong horses, and such as are not skittish; they also bring dogs, which have been taught to seize the swans by the neck, which deprives them of their courage and strength. When they first arrive, they find the swans with their young in the field, which, on perceiving the hunters, immediately take to the water, and on this occasion, it is ascertained, that the bird runs nearly as fast as the most active horse. Having had ocular demonstration of what we assert, we were surprized at the account which Hill gives of the swan in his history of animals, by stating it to have a heavy gait, on account of the conformation of its feet. But the same may be said of all the duck species, while a little reflection will convince us, it is in this kind of progression that nature exhibits the greatest perfection in her works, and that she has no occasion like man, to act according to fixed rules; but that she can deviate from them, and adopt others at her pleasure. We have ourselves often seen a species of duck run with great celerity in the field; even when young, when the rapidity of their motion is such, that it is impossible to remark any changes or movements of their limbs. The hunting of swans is not only advantageous to the Icelanders, on account of the feathers that they sell to foreign traders, but they also have the down and the carcase, which bring a good revenue; they eat the flesh, though tough and hard, and skin the feet in such a way, that the nails remain after the skin is taken off, which, when dried, resembles shagreen, and is made into purses and other trivial articles.

The birds of this district are, with scarcely any exception, the same as those in the southern. We met with a peculiar kind of pelican, which appears to be the fourth species mentioned by Linneus,* or the sixth species, which Bassan calls the

* *Pelicanus cinereo-albus, cauda cuneiformi, rostro serratro, remigibus primoribus apice nigris.*

Fisher.* We, however, were not able to distinguish that difference of colour, which is said to exist between the male and female; but we do not doubt, that this difference does exist between the young and old pelicans. They hunt this bird in spring, when it sleeps upon the surface of the water, with its head beneath its wing, and continually moving its feet, to maintain its equilibrium. When strangers arrive in Iceland, they see with astonishment these round masses floating with the wind and tide; for it is not possible to discover what they are, without approaching very near them, or by making a great noise to induce them to raise their heads, as they sleep uncommonly sound. Nature has also given them the instinct, to select such places to sleep on, as do not require much exertion to keep themselves afloat. At night, the inhabitants get into canoes, and row with muffled oars, that they may not wake the birds; when on coming near them, they stun them by striking them on the head with a stick, and afterwards they ring their necks. After the chace, or if it have not terminated to their satisfaction, they employ themselves in fishing as they return. Another manner of hunting this bird is, to watch it, when it is in pursuit of herrings, because it then raises itself considerably above the water, to discover the fish with its penetrating eye; and as soon as it perceives a heap of fish, it darts into the sea. Sometimes as many as a hundred pelicans will fall in this manner with the rapidity of an arrow; when this happens near the shore, where the waters are low, some of them often strike against a rock, and are killed; these are easily distinguished, as they immediately float on the water, while the others sink to a considerable depth, and remain submersed, till they have satisfied their appetite upon the fish, so that when they re-ascend, they appear heavy and idle, and scarcely able to fly. While the birds are submersed, the hunters hasten to the spot in their canoes, without the fear of alarming them; for being hungry, and naturally voracious after their passage through the air, they will even dart down contiguous to the boats. They then watch their rising, and at the moment, strike them on the head. The inhabitants procure from these birds a quantity of feathers; they also eat the flesh, which is compact and oily.

GULLS.

In the jurisdiction of Borgarfiord, there is a number of gulls of the largest size, (*Laurus albus maximus, dorso et alis superius nigris*, L.) It is remarkable that this bird goes to a great distance from the coasts, on which it habitually resides, to arrive

* *Piscator.*

in these districts. There is an island in the Hitardal, four miles from the sea, situated on a mountain in the middle of the lake of Hittarvatn, which forms an epoch in the history of Iceland. A priest named Haldarson, at the beginning of the present century, sowed a quantity of Angelica in this island. The culture of this plant attracted every year the gulls and wild ducks, who made their nests and laid here in preference to any other spot, because the little shrubby branches of this plant protected their nests from wind and rain. The gull being naturally strong and hardy, protected not merely its own nest, but that of the duck from all the attacks of the raven, and another species of gull. It is known, that in every other part, the gulls are not so favourably disposed towards the wild ducks as here, because they do not like their nests to be near each other. Another remarkable circumstance with respect to the gull, is, that of its agility and strength, which enable it to attack the largest salmon, when they come up the river. In the Thveraa, the water is so shallow in summer, that the salmon cannot swim through it, but are obliged to clear certain spots, by jumping by the aid of their fins: the gull seizes this opportunity to wound the salmon with its beak on the middle of the belly, and this wound, though slight, immediately deprives the fish of the use of its fins, or rather of its whole strength, and it consequently dies. It also frequently happens, that the wound given by the gull, reaches the heart and causes its instant death.

The sea-swallow is also very numerous in these quarters*, and is remarkable for its courage; as it attacks with the greatest effrontery all persons who approach its nest or young; it, however, often pays for its temerity with its life.

There is also here a species of lapwing†, of which such surprising stories are told by the people, that we must admit it to possess more rare qualities than any other kind of bird; it is said, for example, that it partakes of the nature of the worm, and that when pursued, it darts into the earth, however compact or hard it may be. Others assert, that it has very great skill in witchcraft, and many similar prejudices prevail against it, which doubtless arise from its extreme scarcity. It is, however, certain, that this bird exists in many parts of Iceland near the thermal springs, or in the vicinity of the rivulets and swamps; and that not being able to fly, it lives under ground in little holes or cavities; for, when met with, which frequently happens in those parts, it escapes in an instant from the observer,

* *Sterna alba, capite supra nigro, rostro et pedibus rubris, cauda sorcipata rectricibus duabus extrimis longissimis, albo nigroque dimidiatis.*

† *Tringa rostro brevi nigro tota dilute cenerea.*

even in the smoothest fields. Hence, there must be little nooks or subterraneous hollows, into which it retreats, and which it is impossible to discover. In winter, it commonly resides below ground, making choice of a soil that does not freeze, and it often becomes the prey of wild cats. In spite of all our endeavours, we could not succeed in procuring one of these birds: it is of a grey colour, its feathers are very soft, and its limbs supple.

FISH.

The fish caught in this district, being the same as we have already mentioned in the southern quarter, we can dispense with the particulars respecting them. We shall, however, add the following curious account of the manner of

FISHING FOR SALMON.

The Norder-aa is the only river at which a number of hands are employed in catching this fish, the produce of which is divided between the fishermen and the poor people who come to assist them. They first select a part of the river, where the bottom is level, and the current not too strong, and a day being fixed on for the commencement of the operations, several hundred persons repair to the spot. At the part where the water is most shallow, they form a dyke of stones, leaving, however, an aperture, that the current may not be interrupted. This dyke is made in two arms, that go off from the shore in a diagonal line, and terminate in an acute angle, at which is the aperture. When this dyke is made, they extend several nets across the river, and two men on horseback hold the ends of the net on each side of the river followed by others, who are likewise on horseback; they then make their horses swim, which so alarms the salmon, that they can neither jump over the net, nor escape by sinking beneath it. One bank of the river is covered with people, who throw stones into the water to increase the fright of the fish, so that nothing remains for them, but to make towards the angles, or be taken in the nets. The fish are divided between the owners of the nets and of the land; while those who assist, receive a portion from each. In the Gliufuraa, they cannot take salmon by the net, on account of the rapidity of the current, and the large stones that obstruct the bed of the river, when they fall in winter from the mountains. The inhabitants, therefore, use long poles, at the end of which is an iron pike; and with these they strike the salmon and draw it out of the water. To attract the fish to a certain spot, they begin to scare it at a distance, when it makes off; and if it can hide its head between two stones, it remains motionless, and conceives itself in safety.

DESCRIPTION OF THE CAVERN OF SOURTHER.

There are many caverns in Iceland, but that called Sourther is the largest, the best known, and the most remarkable, as well on account of its form, as from the details given of it in the ancient and modern histories of the country. In these histories its name is said to be derived from that of an enormous giant, who resided in it, and the inhabitants believe this fable; but it is probable that the name of *Sourtour*, which means black, was derived from the colour of the rocks, in which it is situated.

There is no doubt that this cave has been inhabited, not by giants but by vagabonds, who escaped to avoid punishment for their crimes, which is probable both from its situation and the following anecdote. In two of the ancient histories it is stated, that in the tenth century, a body of thieves took refuge here and found a safe retreat, because, from superstition, no person would approach the cave, and when they went out to commit their depredations, they had on one side a number of villages, and on the other the land of Arnavatn, which was always covered with sheep and oxen at pasture. One day, however, they were surprised by cutting off their retreat, and surrounding them in a little valley. Several other tales are told of different bands of robbers, who have successively resided in this cavern, which have made such an impression on the minds of the people, that none of them will attempt to enter it.

Our travellers visited this remarkable cavern; M. Olafsen had already seen it in the year 1750, but had not been able to penetrate far, on account of the want of torches and other necessary things. The peasants of the district made every possible attempt to deter them from their project, by insinuating that they would never return, as the spirits never failed to punish the curious by killing them, or preventing them from finding their way back: these tales, however, only stimulated their curiosity.

This cavern is situated to the south of the land of Arnavatn; and the country that surrounds it, bears every mark of volcanic eruptions. The cavern and its environs consist of rocks of lava melted into masses, and exposed to the air a long time before the country was inhabited. It may be seen from the course of the lava, that the eruption took place from the glacier of Geitland or the rocks behind it, and that the flux ran between the glacier and another mountain called Eryksnypa, whence it afterward separated into two branches. Indeed the whole of this extent of country, presents a striking and extraordinary picture of the action of subterraneous fire. On one side may be seen large masses of detached rocks, and on the other, perfectly horizontal strata of stones, melted and mixed into all manner of

forms and figures. There may frequently be seen large crevices, vaults, and arches in the rocks, but particularly three caverns, situated a quarter of a mile to the south of the Sourther. One of these was formerly considered a very convenient place for collecting the sheep, when sending them to pasture, it being very long, with an entrance only wide enough to admit the sheep conveniently; after which they dispersed themselves over the cavern, which was large enough to contain two thousand of these animals. The third of these caves is the longest of all, as it receives at one end a branch of the river of Nordling, and disembogues it at a distance of a quarter of a mile.

The entrance to the cavern of Sourther is gloomy, and runs from N. W. to S. E. but preserves its height, which is from thirty to thirty-six feet, while its width is from fifty to fifty-four. Its soil or bottom is uneven, sometimes rising, and at others falling; its partitions are the same, only that there is an equal distance between them. On advancing, it is perceived that the cavern turns to the south, and afterwards to the S. W. and W. in proportion as it diminishes in width.

Our travellers on entering the cavern, lighted a torch, of which they had brought a supply from Copenhagen; it was well covered with wax and a thick coating of rosin, so as to resist the strong current of air that prevails in subterraneous passages, as well as the drops of water that fall from the upper rocks. Their progress was the most difficult and dangerous that can be imagined, on account of the inequality of the soil, which was covered with large fragments of stone, and to the fall of which they were incessantly exposed, as great numbers drop every year. The vault of the cavern possesses almost the same degree of irregularity from the causes already mentioned, as well as from the stalactites that adhere to it; the roof is full of crevices, which extend longitudinally and perpendicular, and afford passages for the filtration of water.

In this cavern there are stalactites of various sizes, the largest are three inches long by two and a half in diameter at their base; they receive by fusion, the same form as lava-stone, and appear to be composed of the same substance: they are, however, rather finer, and are covered externally with a reddish-coloured varnish; internally, they are more or less porous and compact, proceeding probably from the greater or less degree of heat, to which they have been subjected.

The sides or partitions of the cavern produce the greatest effect, as they are covered with a sort of varnish in horizontal squares, separated by borders in relief. This varnish is formed of a very fine vitreous, but opaque matter: in some parts it is black, but it is generally of a greenish colour, and similar to

that employed in the manufactories of earthenware. This varnish, as well as the stalactites just mentioned, affords a certain proof of the operation of subterraneous fires, and that the lava, in a state of fusion, has passed, like a rivulet, through this channel, while it began to cool on the sides and top of the cavern. The flux of lava must have given to the cavern its present form; while the same fusion must have covered the sides with the metallic alkaline varnish, by melting the interior crust of the cavern in those parts where the heat was strongest. The same cause must also have produced the stalactites.

After reaching a certain distance within the cavern, they perceived the light of day breaking through an aperture in the summit; and on passing this hole the cave became as dark as before, and they observed on each side, at the height of some feet, the mouths of two other caverns. When strangers visit this country, they are often induced, from curiosity, to proceed thus far in the cavern; our travellers ascended to that on the right, and then saw two other excavations, separated by one partition. One of these last caves is narrow, and of no great extent, but the other is double its size. A small portion of light is perceptible at its entrance, and its height enables a man to stand erect; it is supposed to be thirty feet long, its top is arched, and its bottom is smooth, reddish, and declines at the entrance. Messrs. Olafsen and Povelsen found here some large bones of an ox, or similar animal, which they considered as the remains of antiquity, because they were soft and friable, though they were not exposed either to the attacks of water, wind, or weather; they also remarked some common stones of a cubical form, and of a different nature from those of which the rock of Sourther is composed. It is therefore very probable, that they had been brought thither for making a fire-place, as their arrangement seemed to indicate that they had been used for this purpose.

Having examined these small passages, our travellers returned, and proceeded towards the great cavern at their commencement, and to enter which it was necessary to climb an equal height. They found it much larger, but more hideous, and totally dark. On first entering, they supposed it to be nothing but a simple cavity; but on passing forward they discovered, in front of the entrance, a small partition, or kind of column, which, however, was of no great extent: it is a kind of gallery extending beyond the cavern, and to which they formerly gave the name of the *Little Fort*. On one side is a wall, or kind of rampart, built of lava-stone that has been conveyed thither for that purpose. The Stourlonga-Saga, vol. 5, represents this place as a security against any attack, be-

cause those who take refuge in it can discover all who come towards them, and prevent them from ascending, while the attacking party is obliged to proceed in darkness.

At ten paces from the ascent, we discovered an elevation of two feet and a half, extending thirty-six feet, by fourteen in width, and having in the middle a path about two feet broad. It is precisely in front of the entrance, so that one cannot proceed farther into the cavern without scaling it: it consists of lava stone of a square form, which must have been conveyed from the outside, and we are satisfied beyond a doubt, that this cave must have been the retreat of the criminal fugitives to whom we have alluded. The bottom is covered with a very fine black sand, on which they spread sheep-skins, which served them for beds: it is large enough for twenty persons to lie with convenience, provided they place themselves across, instead of along it.

Near this spot we found a large heap of sheep and ox bones, the base of which was twelve feet in circumference; they had preserved their form and natural colour; but on taking them into the hand, they were so soft that they crumbled to pieces. We demolished the upper parts of this heap, and, on reaching the lowermost stratum, we found it almost in a state of dust; the bones of which it had been formed resembling boiled peas, from which the water had been strained. The remains were still moist, and possessed a sort of glutinous quality; we found that the marrow of these bones had separated, from corruption, into two parts longitudinally.

Our travellers expected to meet with some other remains of antiquity; but their researches were fruitless, all the caverns and other parts of the country having doubtless been searched, and excavations made in them with great assiduity, particularly at the time of the Stourloungues, when there was a great scarcity of arms. Our party only found in the place just mentioned, as appropriated for rest, a single small tool, which was but half finished; it was five inches and an half long, and formed a kind of bodkin, the upper end of which was perforated in two places, and the lower end was incomplete. It appeared as if this instrument had served the fugitives for a needle to sew their sheep-skins, and the rags which they used for cloaths. They saw no traces of hearths, except some stones placed in squares, and which had been reddened by the action of the fire; but they found neither cinders nor ashes. There is reason to believe, that they ate their food in the two large chambers or cavities already mentioned, which must have been more convenient by securing them in a great degree from the smoke, which had no proper outlet.

They afterwards went farther, with a view to arrive at the heart of the cavern, which grows considerably narrower, till it is not more than a foot in height, by even a less width. The cave called the Fortification from the rampart already mentioned, is fifty fathoms long, while its greatest width is a fathom and a quarter, and its height nearly the same. It is so narrow and low in the middle, that one can scarcely pass through it on one's knees, and when our travellers thought themselves at the end, they found that it again widened into the form it had before; towards the place where it becomes so narrow, the soil ascends considerably, and afterwards slopes down: at the end of this declivity, our travellers found a lake of fresh water, the bottom of which was frozen. They passed it with the water up to their knees, and at every step they had additional proof that the whole of these caves had been formed by the melting or dissolution of stones. The great channel being at length blocked up for some time, and the fire not being able to find a vent, acted upon the sides, and melted the more dissoluble earths and stones; but before the fiery matter could thus find an outlet, the great canal had forced its way, and had ceased to have any action on the caverns. The narrow passage that our travellers found, proves, however, that the fire did not operate with the same force upon the rocks in that spot, or could not reduce them so easily as the others, because they were of a harder and more resisting nature.

On leaving the cavern of the Fortification, our travellers proceeded farther into the Sourther; they had a difficult route, on account of the rocks which were detached from the top, and at times were obliged to pass on their hands and knees through intermediate spaces filled with water, and soaked through by the drops that filtered from the top. Some of the detached fragments of the rock were upwards of five feet six inches in height: at length, after many attempts to advance, they perceived some rays of light penetrating through an aperture in the roof, and on reaching this spot they found above the hole a heap of ice and snow, which had remained since winter. They pursued their road to a good distance, when they perceived an aperture; but before reaching it, they found a wall that divided the cavern into two equal parts; this wall was below the hole, but it had fallen to decay. The cavern afterwards branched off into two galleries, the left of which was twenty feet in length, and the right much more; while in both of them they every where observed the effects of fire. The gallery to the left became at last so narrow, that they were obliged to creep on their hands and knees; and at this part they smelt a kind of fetid exhalation, propelled by the air of the subterraneous channels: it was an infectious miasma, similar to that which arises

from stagnant marshes. Our travellers, however, were not much incommoded by it.

They afterwards proceeded into the gallery on the right, where the cavern regains its former size ; and here they found a lake of fresh water, which entirely stopped their passage. One of these gentlemen had arrived at this lake in the year 1750. He then found its bottom was frozen as at present, but its water was too high to permit him to cross ; he ascertained that it was three feet deep at the brink, from which he presumed that it must be much deeper in the middle. At his present visit, however, it was different : the ice at the bottom was much thicker, and formed two sheets, one above the other; on this account there was but one foot of water, and they easily passed through it by keeping close to the wall above-mentioned.

After having overcome every difficulty, they proceeded with ease to the other parts of the cavern : the floor here was level, and they no longer met with fallen masses of stone and rock; but they perceived that the soil gradually became steeper, and that the cavern curved to the S. S. W. They also here found but little, either of the stalactites or the varnish, lately mentioned; which proves, that the terro-aqueous matter that formed them, must have been, in this part, more coarse and much scarcer.

The air now became very cold and dense, and the darkness so much increased, that they went from 300 to 400 paces, without perceiving a ray of light; they at last, however, observed the fourth and last hole in the roof, which gave them much pleasure, as it afforded a current of fresh air, and an easy ascent, by which they quitted the cavern.

They perceived no difference in the air, as they advanced into the dark part of the cavern; but afterwards it became more thick and condensed; and, on proceeding, the obscurity increased to such a degree, that, notwithstanding the strong light thrown out by the torches, they could only see two or three steps before them. Advancing a little further, they found that the thick vapour that fell about them resisted their breath, which could only arise from the great degree of cold, the effect of which was visible on the walls, as the whole of them was covered with a thick ice, in long and large lumps. The ground was frozen in the same manner; but they ran no risk of slipping, because the ice was covered with a moist and brownish earth, which had fallen from the roof of the cavern in consequence of the filtration of the water.

They considered it as a remarkable circumstance, that to the lumps of ice were attached pentagonal and heptagonal figures, very similar to those observed in the second stomach of ruminating animals*.

* Aqualiculus, an præcipue reticulum.

There is no doubt that these figures have been formed in the ice by the cold and compressed air: they did not appear in the superficies, but in the interior of the ice, which was compact and transparent.

Our travellers now thought that they had proceeded as far as possible; endeavouring, nevertheless, to go still farther, they perceived that the air was more rarified, and that the soil began to rise, while the ice was no longer to be seen, and their torches burnt clear. The filtration of the water also was very inconsiderable; but it had carried with it such a quantity of the moist mould already mentioned, that the bottom was so covered with it, as to render their progress very fatiguing, as they sunk in it up to the ancles, and could not easily withdraw their feet on account of its tenacity. They now came to an ancient heap of stones, which had been carefully arranged; and, not far from this spot, they found a piece of birch, which had been broken in two: it retained its form and texture, but on taking it up, it crumbled to dust, a proof that two hundred years at least must have elapsed since it was thrown into the cavern. But it was not so easy to discover whence the stones that formed the heap had been taken, since there were no others in the vicinity, and it would have been difficult to convey them from the last aperture in the cavern. On penetrating farther, however, our travellers resolved this problem; for at about two hundred paces from the heap, they found themselves at the extremity of the Sourther, as it here became so narrow, that they were obliged to stop. The narrow galleries, or small passages, which admitted the air, were choaked up by lava; and they found here another heap of the same lava-stone, from which they had no doubt the rest had been taken. Having no other object to examine, Messrs. Olafsen and Povelsen returned to the heap of stones, and in remembrance of the research, they affixed their seals on the summit; they also left two pieces of Danish silver coin, to prove to those who might undertak the same journey, that they would not be the first who had executed a project which perhaps might be considered as fool-hardy.

On returning, they had the curiosity to measure by their steps the distance they had traversed, and found the whole length of the cavern to be 839 fathoms. This remarkable cavern is the largest of any that our travellers had occasion to see in Iceland. There are several others, which are reported to be greater, but there is no foundation for the assertion; and there is no doubt that the Sourther is the widest and most even of the whole. It owes its origin to a mighty effort of nature, and indisputably proves the operation of subterraneous fires, as it every where exhibits the channels through which the melted substances flowed. It also shews with what facility these fires can decom-

pose and melt the earths and stones, carrying them off with the matter in fusion.

Of the acidulous mineral waters of the Hitardal, they have little to observe, except that they are the best in all Iceland, being as strong as the most spirituous beer, so that a person drinking above a certain quantity of them will become intoxicated.

VARIOUS INTERESTING PARTICULARS.

THE FORGES OF THE MYRAR.

We have already observed, that there is a great quantity of iron in this district, particularly in the Myrar; but there are few accounts of the ancient forges of Iceland, except in some of the almost forgotten histories. In one of these, the *Egils-Saga*, cap. xxi. is an account of the celebrated *Shalagrim*, from which a fabulous legend ought to be erased: it is said that this man plunged into the sea, and succeeded in procuring a stone of an enormous size, which is shewn as a curiosity to all strangers who come to Roedenæs, the place at which Shalagrim resided. There are many traces to be perceived of a forge, and many authentic proofs may be obtained of the knowledge possessed by the ancient inhabitants of Iceland, as to the preparation of iron.

ANCIENT INSCRIPTIONS.

The scarcity of old inscriptions in Iceland is very astonishing, because the people are known to have been very exact in noting down remarkable occurrences. It may, therefore, be supposed, that inscriptions were not in use amongst them, though the Swedes generally adopted this practice, and in that country many inscriptions are to be found of a very ancient date.

That which remains at Borg, in the Myrar, is the oldest that can be observed in Iceland. It is engraved on a stone that has been conveyed hither from Baula, and is a piece of rock of the nature of basaltes. The characters are so much worn out, that it was with extreme difficulty they could be recognized, which difficulty was increased by the circumstance of the stone being broken into three pieces. The principal inscription is remarkable for its simplicity. It is in large Roman characters: *Her lige Harl Kartan*—"Here lies Charles Kartan." After this are placed three straight lines, but so much worn out, that they could not be decyphered; and as for the rest, they appear only to have been the initial letters of words. It is, however, conjectured, that these are the words intended—*Firi svik af saari deydi*—"He died of the wounds given him by an assassin." This *Kartan* was descended by the father's side from blood royal, since his father

was *Olaf*, surnamed *Paw* on account of his beauty and magnificence. His mother was sister to *Myr Kiartan*, King of Iceland; his history represents him as a man of uncommon skill in medicine, and adds, that he surpassed all his cotemporaries in the arts that flourished in these remote times. He made a voyage to Norway, where he was well received by the King, *Olaf Trygesen*, who converted him to the Christian religion. He proposed to him to remain at his court, and offered him one of the principal places in his kingdom; but Kartan preferred returning to Iceland, where, at the instigation of a woman of rank, he was assassinated by some of her friends near *Svinedal*, in the district of Dale. He died in 1003. It is said, that before he fell under the repeated blows of his assassins, he defended himself for a long time with extraordinary valour. As the church of *Borg* was the nearest, he was carried thither and buried. Snorre Sturleson and other historians of Iceland mention several particulars of the life of this Kartan.

THE CHURCH OF HITARDAL.

The antiquities that are met with in the church of Hitardal, are of different periods, but are all very ancient. Some are sculptured, in the same kind of stone as that which partly forms the walls of the church. We were struck with the curious appearance of two human figures cut in two angular stones on the outside of the church, one of which is represented with, and the other without, a beard. The stories related of them are still more curious; one is said to represent *Board Snœfells Aas*, a very famous Pagan giant and sorcerer; while the other is asserted to be the figure of *Hit*, his mistress, also famous amongst the female giants; she lived at Hitardal, and from her the valley takes its name. But though such accounts must evidently be fabulous, it is extraordinary, that the learned Jansen represents them as worthy of credit. In a passage of the *Baardar Saga*, it is said, that when the priests undertook to build this church with stone walls, which put them to considerable expence, they made choice of these female giants, who were Pagans, as patronesses of the temple, and ornamented its walls with these figures. This building was destroyed by fire in 1148, on which occasion seventy persons perished, among whom was Magnus Einarson, bishop of Skalholt. About thirty years ago, on laying the foundation of a house near this church, a quantity of large charcoal and half-burnt beams were dug up, which were supposed to be the remains of the fire alluded to. In 1166, Klænger, the then bishop of Skalholt, consecrated a farm at Hitardal, and built on it a convent, at which period the church was doubtless built of stone, and the foundation laid of brickwork. Klænger established this monastery to the memory of his predecessor, who met

with so unfortunate an end; but it did not stand long, as it was destroyed a few years after its erection, by an ignorant man in power, who came to reside in the Hitardal.

OF THE FARM AND TEMPLE OF IDOLS IN THE REYKHOLZDAL.

At Hofstadt, in the valley of Reykholz, a little distance from the place at which stands the church, was formerly built the most ancient Pagan temple. This place was also the residence of *Illuge*, surnamed the Red, who was one of the first conquerors of the country. On leaving this spot, he made over to *Holm-Starre*, of Abranas, the care and direction of the temple, and bargained with him not only for the exchange of all the property he possessed, but also for his wife named *Igri;* the latter, however, not being satisfied with the change, hung herself in the temple the moment her husband had taken leave of her.

JOURNEY TO THE WESTERJŒKEL.

GLACIER OF SCHNEEFIŒLD.

This western glacier, which the inhabitants call Schneefiœldjœkel, or, as it was formerly denominated, Sniofell, which means a rock of snow, passes for the highest mountain in Iceland. It may be considered as insulated from all the rest which stand around it, and it rises much above them. On our approach towards it, we passed by several caverns, which, like those already mentioned, had evidently been formed either by subterraneous fires, or a natural sinking of the soil. Beneath them we found a number of plants, that had grown to an extraordinary height between the rocks, being nourished by the heat of the ground, though the rays of the sun never reached them; from which it is clear, that this vegetation is produced entirely by the heat concentrated in the bowels of the earth. Several plants were also growing amongst the lava, as well as between the uppermost rocks; and amongst others were some shrubs of birch, heath, &c. on which the sheep depastured both in winter and summer.

Among these caves is one called the "Cavern of Blood," and not only strangers, but likewise the inhabitants of the island, never pass near it without paying it a visit. It is situated amongst some rocks of sand-stone, a little beyond the Strappefell, which is a high peak below the neck of the glacier. The entrance to this cavern is so narrow, that the visitor is obliged to creep into it on his belly. Within it is about fifteen feet high, by ten wide; but not so wide at top as at bottom. Towards the top it separates into two concave arches, which appear to have been formed by the action of the air and wind, to which, from its con-

formation, it offers the fullest scope, and the strong repurcussion which gives rise to echo and counter-echo, which, however, is not at all regular in its sound. Travellers who enter this cavern from curiosity, amuse themselves by singing and hallowing, to hear the effect. But it is more remarkable, that the slightest sounds are distinctly repeated; as for example, on merely coughing or speaking in one's usual tone, a melancholy sound or murmur succeeds. Several niches are observable in this cavern, as well as many runic and magical characters engraved on the rock; but most of them are effaced by time. The date of the earliest which we could recognize was 1483.

HEIGHT OF THE GLACIER.

We were assured that some persons had succeeeded in measuring the height of the Glacier, from a plain called Breid, situated to the eastward, about a quarter of a mile east of the castle; we could not, however, succeed in this point, on account of the badness of the weather, which prevented us from using our barometer. The Academy of Sciences at Copenhagen had indeed taken the trouble to send us tubes and mercury for constructing one ourselves; but it may easily be conceived, how difficult the conveyance of such instruments must be on horseback; besides which, all the utensils necessary for their construction were wanting: those which we had, contained air, and were consequently in such a state, as not to enable us to trust to their graduation.

The inhabitants of this part of the country considered it as rashness in us to attempt to escalade the glacier; they gave us a frightful picture of the dangers and difficulties we should encounter, and assured us, that it was impossible to reach the summit of the steep rocks in our view; that, besides, nobody could even arrive at them, on account of the ruggedness of the road, and the holes in the ice, which could not be passed without the risk of being every instant precipitated and lost. They likewise added, that if we gained the summit, we should be exposed to the loss of our sight by the strong repercussion of the rays of the sun, which fall incessantly on the icicles. They then informed us, that two hundred years ago, two English sailors made an attempt to escalade this glacier; that they succeeded in reaching the summit, but one of them soon after became blind, and being separated from his companion, wandered about the mountain till he perished, because the other was unable to render him any assistance in descending. The latter, hower, took the precaution to kill a lamb, and carrying the blood in a leather bottle, dropt it on the ground as he advanced; so that, though his sight was much injured, he could distinctly observe the red spots on the ice, and

thus find his way back. Other weak-minded people endeavoured to dissuade us from our project, by relating various fables of gnomes and other phantoms, but without success; for all they said, only contributed to augment our curiosity; besides which, we took pleasure in making an attempt that might cure these good people of their prejudices. The 30th of June, the barometer began to ascend: the weather was fine, and the clouds dispersed; while the thermometer proved, that the cold had diminished.

On the 1st of July, in the afternoon, we set off with every preparation for our journey. Our instruments consisted of a compass, a Fahrenheit's thermometer, and a barometer. Our shoes were like those worn in the country, having very thin soles, as being best adapted for walking on the ice. We also had some strong ropes for assisting such of the party as might fall into holes or crevices, which are very numerous about the neck of the glacier. We likewise took the precaution of providing black crape, to put over our faces in case the light should be too strong, as well as a sponge and vinegar to respire it, if the air should become too rarified.

We had a tedious journey from mountain to mountain, before we reached the glacier. Our barometer embarrassed us considerably, and we were often obliged to descend from our horses, in order to convey it on foot. In short, four hours had elapsed before we gained the summit of the highest mountain, which forms, as it were, the base or seat of the glacier; and here we found the cold very severe, as water froze, and the ground was covered with ice.

A little farther we reached the Geldingafell, a higher mountain than any of the others that form the support of the glacier. We saw scarcely any snow on its summit, and ascended it on the side where it touches the glacier; because the ice descends so far on the right and left as to project to a considerable distance beyond the mountain itself. We remarked on the north and west, where the ice forms a bank, a quantity of stones, which had been regraded by water; though, to the north of these strata of ice, we only observed one small river, or rivulet, and, to the south, a few others; which, if taken together, appear to form only a small portion of the water, which must be produced by so considerable a mountain and such a quantity of ice and snow, from which we concluded, that the glacier must have a cavity at its base, that ingulphs the rest. Hence we should not consider as altogether fabulous, the account related of the plains to the west, which are said to have formerly contained such extensive rivers, that merchants' ships could ascend by them to the very foot of the mountain, where may still be seen the remains of houses reported to have formed the magazines of the Irish merchants.

The land which surrounds the glacier is on all sides covered

with holes, clefts, and caverns; some of them are used as shelters for sheep; and one of the caverns, situated near the fishery of Oendvertnœus, is considered unfathomable. On entering, it forms a number of sinuosities, and doubtless extends as far as the sea. It is certain that this, as well as the other caverns near it, owe their origin to the cause already mentioned, namely, the passage of burning lava.

JOURNEY TO THE GLACIER.

We at length, after much trouble, reached the Glacier on horseback, and found that our barometer had already fallen two inches. We continued our route for some time over tolerably level ice; but at last it became lumpy, and we were obliged to advance on foot. The farther we proceeded, the more irregularity we observed in our compass; insomuch, that we soon found it could not be relied on. The weather was finer than we expected, the air being calm and without fog, while the rays of the sun were only intercepted by thin clouds. The ice did not reflect like a mirror, and the cold was so severe, that the warmth of the sun was imperceptible: the air became more and more light; and, though the ascent was not very steep, we felt ourselves oppressed. The mercury in our barometer at length fell so low, that it began to flow out of the bowl, which was occasioned, not only by the external air, but also by that contained within the tube.

After some difficulty in passing crevices and fractures in the ice, we reached in safety the summit of the glacier: it forms three peaks, each of which is about fifty fathoms in height. These peaks appeared to be inaccessible, particularly as some snow had lately fallen, and began to freeze; we nevertheless overcame these obstacles, and escaladed the eastern peak, by means of our pointed sticks and cutlasses, with which we made a path in the ice. We could not carry the barometer, but on putting it down, we observed that it had already fallen to three inches and nine lines; as to the thermometer and compass, we continued to convey them. It was nine o'clock in the morning, and the sun shone in all its splendour; notwithstanding which, the cold was so excessive, that we could scarcely resist it: the thermometer fell to the 24th degree; it must be a very cold winter in Iceland to produce such an effect, and it is, therefore, not surprizing that it should freeze with the utmost severity on the glacier in that season, since it is so cold there in summer. It would be superfluous to attribute the cause of this severity to an abundance of nitrous particles, as many learned men have already expatiated on the subject.

The compass was uncommonly irregular: the needle did not point to any particular part, but moved repeatedly from one side

to the other. Sometimes, instead of pointing to the north, it turned to the west, and there remained motionless; and if it were made to change by the finger, it quavered a little, and then settled at a point directly opposite to that from which it had been moved It, however, did not go beyond certain limits; for it remained in the northern semicircle, between the east and west, but never removed to the south side.

What is properly called the Glacier has been melted on the south side, and is full of crevices extending in a parallel direction; we did not, however, observe any towards the west; but we saw one which reached transversely to the summit, and had a horrible aspect, on account of its depth, which made it appear entirely green. It is so extensive, that it seems to cut diametrically a third of the mountain; and its depth is so great, that we could not discover the bottom. As far as we could see, we observed many other crevices, extending longitudinally and perpendicularly, but they were all of a very inferior size to the one just described.

The Glacier has evidently been the cause of the subterraneous fire which has overthrown the promontory on all sides; its present construction sufficiently proves this; for there may be seen in every direction several vast spots, formed of scoria; while in others, the soil is in some parts level, and occasionally exhibits banks of sand, and white, red, and black pummice-stone, mixed with ashes and pebbles.

RETURN FROM THE GLACIER.

There was no bog on this part of the summit of the Glacier, because it could not rise so high on account of the equilibrium of the air. Having nothing more to excite our attention, we thought of returning, as the fogs we should meet with below might be dangerous, because we could not trust to our compass; we were, however, agreably disappointed, on finding but little fog as we decended, on account of some strong winds which arose and dispersed them.

The wind having changed to the N. E. and the Glacier becoming enveloped in clouds, we accelerated our return, and towards noon reached the bottom of the mountain, without the least accident. Towards evening, the weather having cleared up, we made arrangements for measuring and ascertaining, as accurately as possible, its real height. For this purpose, we employed a chain sixty feet in length, and an astrolabe divided into half degrees. The result was, that we found it to be 686 Danish feet in perpendicular height. If the state, nature, and weight of the air were the same over the whole surface of the earth, so as to enable us to draw a just and precise inference from the ascent and fall of the mercury, it would, perhaps, appear, that the mountains in Iceland are not so high as has been hitherto supposed.

MINERAL WATERS.

In this district our travellers examined a great variety of acidulous springs, most of which were similar to those already described in the outset of their journey. They made many experiments with those waters, in order to ascertain their chemical properties, but with no great success, owing to the want of a proper apparatus.

ICELAND DIAMOND.

In a mountain called the Kluckour, our travellers met with a species of rock-crystal, *(crystallus pyramidalis)*, the lumps of which were mostly laid in small pointed pyramids, on a bed or pedestal of crystal of spath; they were from a quarter of an inch to two inches long, and half an inch in thickness: most of them were cut in hexagons, though some formed the pentagon and heptagon. The greater part of these lumps of crystal is white and opake, the superficies only being clear or transparent to the depth of three or four lines. This crystal is so hard that it cuts glass, and hence the Icelanders give it the name of diamond.

In this country there are various species of rocks, which have been formed by volcanic fires; amongst them are the Iceland agate,* the native glass,† the hraun,‡ and the natural scoria,§ which is coloured in the upper parts; besides which are the pummice-stone,‖ the stalactites,¶ and the sand-stone.†† The kind last mentioned bears fire in a wonderful manner; and we think it would be very useful for the construction of stoves, furnaces, and crucibles.

The fertility of the ground is not equal in every inhabited part of the Sneefiæld-Naes; but it is scanty in every direction. The places best adopted to the grazing of cattle are in the pasturages situated on the mountains.

REMARKS ON THE INHABITANTS.

The conformation ofthe inhabitants of this district is various, on account of the mixture of all sorts of people who come annually to fish, and of whom the majority take up their residence on the spot. Hence there may likewise be remarked a great difference of their moral conduct: the labouring class are, however, more adroit here than in the southern part. About seventy years ago, the inhabitants in the vicinity of the Glacier were considered to be

* *Agathes Islandicus, an vitri naturalis nigri globuli.*
† *Vitrum naturale fragilissimum nigrum ligaturis transversis argillaceis.*
‡ *Sionia naturalis communis, saxumve liquatum cavernosum.*
§ *Scoria naturalis pulcherrime picta et colorata.*
‖ *Pumex.*
¶ *Stalactitæ vulcanii.*
†† *Saxum tophaceum schistiforme per strata liquatum.*

rude and dishonest people; but at present a very different idea is entertained of them, as they have been much civilized by the good order established amongst them, as well as by their intercourse with the other inhabitants of the island, who, in times of scarcity, have been obliged to quit their habitations, and take refuge on the sea-coast, to fish for a subsistence. Their houses are here smaller and worse built than in the Borgarfiord, particularly those of the fishermen, which, though spacious, are very filthy; and, in the fishing season are disgusting to persons who come from any other part, on account of the fetid smell which arises from them: they are covered in with bad turf, and a few of them are thatched. The wretched manner in which they are built arises entirely from the poverty of the people; and their unhealthiness is occasioned by the walls, hillocks, &c. which are formed for drying the fish.

Such people as are not able to procure tubs and other vessels for containing their fish oil, make ditches for this purpose in a compact and hard soil; but these are of little use till the second year; because, in the first, the oil is absorbed by the ground, which thus becomes imperviable to what is afterwards put into the ditch. The people are very careless and dirty in their manner of preparing food: they live chiefly on fish, which they dress while fresh, but have few vegetables, on account of their want of gardens. Their drink is similar to that of the people of the other districts.

We find ourselves obliged to say something relative to the drink or nourishment of the children: because this subject has given rise to controversies amongst the different authors who have written on Iceland. The mothers only suckle their children for two or three days after their birth; and it must not be supposed, that they are then provided with wet nurses. Want alone compels the indigent women, who reside at the fisheries, to give them the breast longer; but this only happens in those parts, where, after suckling for a month, they can procure for them a little cows' milk. In years of scarcity these poor little innocents are to be pitied, because they receive no milk, either of one kind or other. It was, doubtless, in such times, that former travellers saw the unfortunate mothers feeding their children with a little milk and water. We were assured that, in scarce years, the mothers were able to give their children nothing more than warm water, or fish-broth, with a few drops of milk to whiten it, as few had the means of procuring flour for making gruel.

The chief occupation of the people here is, in summer, fishing; and, in winter, rearing of cattle, in which they adopt the same plan as the inhabitants of Kiosan. In spring the women are forced to attend on the cows and sheep, to weed the meadows, manure the land, &c.; in summer the men mow the grass; and, if they live near the sea, alternately employ themselves in fishing,

though it is seldom that they succeed in both these opposite occupations. Those who are passionately fond of fishing, generally neglect their cattle, and the labours of the field; while others, who are more attached to an agricultural life, abandon the fisheries. But there is never a want of labouring people in the vicinity of the Glacier, since there is always a number of lads who are anxious to be occupied. In summer they pass to the interior of the country, and are engaged by the day; and these young people are not permitted to abandon any regular occupation, unless they have property to the amount of forty rix dollars: which property must consist partly in cows and sheep. This precaution is highly judicious in a country where the population is too thin to afford a sufficient number of hands for improving its possessions. The landholders also will not accept any person who is not of sufficient age and vigour to support hard labour, or who may not be capable of active assistance in time of harvest. The time of labour, in a day, was determined by an ancient law called *Boelagen*, but it is too severe, and there are few men who are now able to fulfil it; which must prove, that the ancient ell of the Icelanders was much less than it is at present. According to those laws, which seem to have been prepared with much wisdom, each labouring youth, who in harvest time might cut thirty square fathoms per week, or nine hundred Iceland ells, received one rixdollar in money, and his food. Those who could not do so much, were paid in proportion to the work they performed. There are, however, some, who, though considered as middling labourers, since they perform one-fifth less per week than the quantity just mentioned, receive for the season, besides their food, two rix dollars in money, eight ells of woollen cloth, two pair of stockings, a pair of woollen gloves, and a new dress for fishing; besides which, they have a right to be provided with a lodging. The food and wages of a domestic servant are of less value; but a lad, on the contrary, can earn in summer eight rix dollars, which are paid to him in butter, woollen cloth, sheep, and partly in money.

From what has already been said, it must appear, that the majority of the young people lead a life of celibacy, because they are not able to accumulate the sum established by law, to settle them as small farmers; a circumstance which materially militates against the progress of population.

OF THE PREPARATION OF SKINS AND LEATHER.

One employment of the inhabitants of this district consists in the preparations of skins and leather, which are used for dresses for the fishermen, and in making forge-bellows'. The strong leather which is made into ropes and harness, is saturated with fish oil, after which it is rolled up and beaten with a billet of

wood, till it acquire a proper degree of pliancy. They also prepare skins by steeping them simply in skim-milk or brine: those used for saddles are tanned with birch-bark, and afterwards blackened with the same dye, that is used for woollens. There are also other processes in the dressing of skins, of which they make a regular trade: some they rub and impregnate with the brown fat of their smoked meat, which gives to the skin an intolerable fetor; others are made more perfectly white, clean, and sweet, by rubbing them with cream mixed with a solution of salt; and these skins are admired by all travellers for their beauty and goodness.

OF THE FISHERIES.

So much having already been said of the manner of fishing in Iceland, we shall be very brief in our remarks on the method adopted in the country of Westerjoekkel, or to the west of the Glacier: it is, however, deserving of some notice; inasmuch as the fishery here is the most important of any in Iceland; while the manner of fishing differs considerably from that practised in the other districts. In this quarter the fisheries that surround the Glacier are very numerous; and the season is from the beginning of April to the middle of May; and angling, or fishing with a strong hook and line, is much and successfully adopted. In the vicinity of the Glacier they only use canoes or boats made of oak, in which eight or nine men can sit at their ease and follow their occupation; while others can only hold from two to four persons. They know by experience the spots which abound in fish, and throw in bait of worms, or pieces of sole and other fresh fish, and sometimes the flesh of birds, particularly of ravens, which they kill near the Glacier. Each boat throws out from four to six floating lines, and two of the men placing themselves at the prow, agitate the water with their oars, partly with a view to keep the boat from advancing or falling back with the tide, as well as to induce the fish to bite, which they will not do if the hooks are shaken by the motion of the boat. Notwithstanding this simple method, these fishers will often catch, in a short time, a greater quantity of fish than their boat will contain, on which they take off their heads and intestines, with the exception of the liver, and throw them into the water. When these fishermen observe, that they are likely to have bad weather on their return, they put all the fish they have taken, on a string, and throw them into the water; on which the commander of the boat, taking the end of the line, draws after him the vast train of fish, which serves for a rudder, and is more useful in a rough sea than any other. On gaining the point, the greatest difficulty they experience is to have their boat on shore, beyond the reach of the tide; they then divide the fish amongst them.

The fish most numerous here is the cod, which they prepare in a peculiar manner: they take out the spinal bone as far as the third vertebra above the navel, an operation which they are obliged to perform by law, and which causes the fish to dry speedily. They also cleanse it from all the blood it may contain, which causes it to take a white colour; and some experienced fishers are so particular in this point, that they gut the fish the instant they have taken it from the boat. They afterwards pay much attention to preparing the bladder, which consists of a coriacious skin similar to leather: it is about a line in thickness, and perfectly white. In thin cod, which may have remained a long time on a sandy bottom, this bladder is found full of a viscous and yellowish matter, which forms an agreeable, wholesome, and nourishing dish, and is used instead of isinglass, which is here unknown. The people engaged as domestics, and who are sent on fishing excursions, are obliged, by virtue of an ancient law, to prepare the cod, extract its oil, and give a proper account of the whole to their employer. Such as are dried in the open air upon cords have a delicious taste; though many prefer those that are dried on the rocks by the north winds, which render the flesh wrinkled and hard.

AMUSEMENTS.

The amusements of the people in this part of Iceland consist of wrestling and dancing, the latter of which is neatly performed, and much resembles the Polish dance. From ten to twelve men form a ring, and two others stand at opposite sides, one of whom attempts to break the chain by passing while in the dance, under the arms of the others. On reaching the opposite end, he joins hands, and the other then makes the same attempt. This dance, when well executed, has a pretty effect. In winter evenings the peasantry amuse themselves with reading or singing historical anecdotes; and those who understand the ancient writings, and have a good voice, are much esteemed and make a living of their talent.

QUADRUPEDS.

The animals of this district being in no respect different from those already mentioned, require no detail. With respect to the foxes, it is said, that they steal the birds' eggs from nests that are made on the steepest rocks. They go in companies from six to ten, and on reaching the top of the rock they wrestle together, to ascertain which is the strongest, and him they choose to support the others, who follow by successively holding the tail of the one which precedes, and thus descend amongst the rocky precipices, where the crows deposit their eggs. As soon as the first has got an egg, he gives a cry to inform the others; on which those that follow him,

draw him up, by moving successively backwards to the spot whence they set off. Thus their hunt is long and difficult; since, when one has got an egg, the animal next to him must perform the same manœuvre, and so on, till they have all been served. Unless one were to have ocular demonstration of the stratagem of this animal, it would be difficult to give credit to any account of it; since they are obliged to ascend and descend the perpendicular rocks by the aid of their paws. It is more probable, that the foxes, instead of going in troops, would be cunning enough to search alone for such parts of the rocks as are least steep, in order to descend to the nests.

SPECIES OF FISH.

Having spoken of the manner of fishing, it may be proper to specify the different kinds of fish which are most abundant. Amongst them are six sorts of cod; namely, *Gadus maximus; Gadus minimus; Gadus dorso tripterigio, ore imberbi; Gadus dorso tripterygio, lineâ laterali nigrâ; Gadus (longus major) dorso monopterygio ore citrato, dentibus acutissimis; Gadus (longus minor) dorso monopterygio, caudâ minimâ rotundâ.* There are besides, in great numbers, the *Clupea vulgaris maxima*, and the *Clupea villosa, vel fœtens;* the *Plevnorectes, oculis a dextra totus glaber; Flesus plevnorectes, oculis a dextra dentibus obtusis, squamis asperis spina adanum; Plevnorectes, oculis et tuberculis 6 a dextra capitis, latere dextro nigro maculato, maculis rotundis cruceo rubris; Lumpus marinus; Cyprinus pelagicus; Perca pelagica (major); Cottus Alepidatus; Gasterosteus aculeatus, oculis in dorso tribus; Raja (major et vulgaris) dorso non aculeato;* and *Raja aculeata.*

Whales and dolphins also are very numerous here; the latter go in troops, and it is asserted that for some time in summer, and generally towards the end of August, they become blind. It has been remarked, that if they do not lose their sight, their head is so much affected, that in the mildest weather they will suffer themselves to be taken, or dart ashore. In 1744, nearly a hundred of this fish assembled in a bay between Oluffsvig and Revet, where they were all killed: their flesh is of a good taste, but is hard and difficult of digestion. With respect to the whale, we shall have a future opportunity of alluding to it in detail.

FORESTS OF BIRCH.

The annals of Iceland, and still more the traces that are met with in the ditches of turf already mentioned, as well as the lumps of petrified wood, sufficiently prove that forests of birch-trees were once very numerous: indeed there are several still in existence.

It would be impossible to deny, that the sea has greatly dimi-

nished in this country, which is attested by experience; but it yet remains to be determined to what degree this diminution has taken place; and there are many of the old inhabitants, who remember certain spots which now contain farms and meadows, to have been covered with water.

SUBTERRANEOUS FIRE OF BORGARHRAUN.

The combustion at Borgarhraun did not take place till the tenth century, when the subterraneous fires burst forth. The Landnama-Saga attributes it to the wickedness of a magician. It first appeared at night by a terrible volcanic eruption, which reduced to ashes several houses, with all their inhabitants. By this event the country was totally laid waste, and covered with black rocks and scoria to the extent of three miles from N. E. to S. W.; and to the width of a mile and a half. A great part of the fiery matter took its course towards the sea, and formed a number of creeks. At the place where the houses were burnt, there is now a spot called the Eldborg, or castle of fire, which consists of a very high, white rampart, entirely surrounded by black rocks of lava, and internally hollowed. At the distance of four or five miles, the Eldborg may be taken for a considerable castle; and it seems that on this spot the greatest eruption took place. The Eldborg is a small mountain, or rather round, steep, and perpendicular rock, presenting an undulated and stratified façade, in one regular mass, without crevices or fractures: it is hollow, and rests at top of the volcanic aperture, presenting a slight wall from a foot to an ell in thickness. We measured the diameter of the aperture by means of a cord, and found its greatest width to be 636 Danish feet, because it does not form an exact circle. This rock is steeper within than without; and is much frequented by ravens, who make their nests in it: the interior height, from the base to the top, is 169 feet. This wonderful place serves as a guide to travellers in passing the Langfiærer; for in dull weather it is easy for them to mistake their course.

INTERESTING REMARKS ON THE INHABITANTS.

It was between Helgafell and Tor Snaes, that one of the first inhabitants of this country came to take up his residence; his name was Thorolf Monsträiskæg. A temple of idols was constructed at the foot of the mountains, towards the west, near a gulph, and its remains are still to be seen, as are the vestiges of the pastures and farms which he established. Thorolf and his descendants believed, that after their death, they should return and inhabit Helgafell; and from this idea, they directed that all their cattle should be left at full liberty: the people were forbidden to drive them out by force; but were enjoined to let them

sally out according to their pleasure, and they were particularly commanded not to strike them. They consequently considered the mountain in question as a sacred place, and no one presumed to look at it till he had washed his face and hands. The bailiwick of Thorolf was also regarded as a sacred place, and served as a hall for the administration of justice. Near this spot, at Thingvalle, is still to be seen their Blodstein, or sacrificial stone, on which they put to death their criminals. They were extended across the stone, with the face upwards; and the executioner, after breaking their loins, cut their throat, and knocked them on the head. When private parties had disputes on doubtful subjects, they proceeded to Helgafell to take advice; for it was supposed, that whatever should be decided there, would succeed to the utmost.

At Helgafell was built one of the first churches erected in the western part of Iceland. In 1183, or 1184, the convent of Flatoe, which had already existed ten years, was transferred thither. This rich convent was secularized at the time of the Reformation, and the ground belonging to it, which consisted of a hundred pieces of land, was dismembered, and divided into as many portions, on each of which were established from two to four farms. Of this convent Olaus Magnus speaks, and asserts, that a considerable quantity of fish was amassed in it, and sold to commercial foreigners.

INNS OF THE ANCIENT INHABITANTS OF THE COUNTRY.

One cannot read without admiration, in the Landnama-Saga, of the zeal of the inhabitants of Sneefiaelds-Naes, for the public good. They formed roads, and established inns, at which all travellers were received, without paying any thing. The annals above mentioned, take particular notice of two of these inns, which were formerly in this canton. They were founded by two women, one named Gerrid, and the other Thara. The same order was observed in each: the tables were always well covered, and all strangers might eat gratuitously of what they afforded. These matrons used to seat themselves before their doors, and solicit travellers to dismount from their horses, and refresh themselves. An example of benevolence equally remarkable, is that of a man named Soelve, who resided to the south of the glacier: finding that he could not carry his establishment to as great an extent as he wished, in the country where he resided, he transferred his property to a place called Salvoharnmer, and laid out a farm on the edge of a road, near which all necessitous travellers were obliged to pass. A person of distinction founded a similar establishment in the Norderadal, beyond the Skagefiord. This man's name was Thorbrand Oer-

rek, and his building was so extensive, that travellers could pass through it with their baggage, and were furnished not only with provisions, but with any thing for which they might have occasion. In this edifice there was always a large fire, at which the traveller might warm himself, or prepare the food and drink which he received.

BORSERKIA HRAUN.

This is a large extent of ground, covered with scoria and lava, in the vicinity of Helgafell; and on it is a long rampart, constructed of large stones. History relates, that this rampart owes its origin to two brothers, on one of whom was imposed the task of building it, as the condition of obtaining the hand of a young woman with whom he was in love; but before the marriage took place, the young couple were destroyed by a fire; their tomb may still be seen amongst the lava of Borserkia.

TRODAAR-UNDUR.

The annals called Eyrboggia Sagas, mention an adventure which took place in this district in 1700, and which, if it had the least appearance of truth, would be really remarkable; but these annals are allowed to rank amongst the most authentic. It took place at the parish of Trodaar, situated to the east of the Glacier. Shortly after the inhabitants embraced Christianity, an Iceland lady died suddenly at Frodaar, and ordered in her will, that every article which composed her bed, should be burnt, even to the curtains; her husband, however, not willing to destroy such valuable articles, they being very rich and fine, forbade his people from touching them. Soon after a pestilential disease broke out in the house, and carried off all its inhabitants one after the other; the husband however, with a few of his people, met his end in a different manner; for being at sea in quest of provisions, the vessel sunk, and they were all drowned. This adventure spread terror throughout the canton; as soon as any one died, he was expected to return, and nothing was talked of but phantoms and spectres. The people used to collect together in the evening to talk of the event, and did not separate till the fire had burnt out. At last, not knowing to what saint to offer up their prayers, they applied to a man of distinction named Snorre Gode, who is celebrated in the histories of Iceland, as one of the most learned persons in the country. He sent to the house several adroit and courageous men, with orders to burn before the door the articles in question, according to the will of the deceased; they afterwards assembled, in the same place, a judicial commission, according to the ancient laws, and the spectres were ordered to

appear before them; they were asked, why they quitted their sepuchres to torment the living with similar questions put in all due pomp; after which sentence being pronounced upon them, they disappeared for ever. Although this account can only be considered as a fable, or reverie, the result derivable from it is, that a single man of genius and good sense may easily destroy the most rooted prejudices of the ignorant.

VOYAGES IN THE WESTFIORD.

Our travellers being obliged to regulate their conduct according to time and circumstances, made several voyages in the Westfiord, and took notice of a variety of tracts of country along the shore, as well as of some little islands, almost unknown to foreign navigators; but which, being mostly barren and uninhabited, afforded nothing worthy of particular remark, except two Glaciers, the Glaama and the Drange, which are of a prodigious height and extent. The former is situated in the district of Isefiord, and runs in a southerly direction; while the latter reposes on the top of a mass of rocks, between the districts of Isefiord and Bardestrand. It takes its rise from a great chain of mountains, that form a ridge near the land of Trochyllis, run in a direct line to those of Skorar, and are twelve miles in extent by six in breadth, some of these mountains are 300 feet in height, and others upwards of 500, as were ascertained by admeasurement, though to the view they appear much higher.

The district of Dale, a bailiwick in the Westfiord, which contains seven tribunals of justice, fourteen churches and six parishes, is, incontrovertibly, the finest and best in Iceland. Next to this is the Reykholt-Sveit, which contains a number of the largest and most remarkable boiling springs in the western quarter of Iceland. We proceeded thither to ascertain their degree of heat, and to observe, whether salt water was not conveyed thither, and evaporated, as the sea is at no great distance; and it is not easy to find so convenient a situation for this effect. We stopped at three springs near the farm of Reykholt, which rise from a hillock about forty feet in height: the water issues from numerous veins in a kind of rock; and the inhabitants frequent these springs for domestic purposes. The principal of the three, called Krablande, has a reservoir only two feet in diameter, which is in a compact rock, and from which the boiling water issues to the height of four feet, making the air resound with a harsh and disagreeable noise: it sometimes rises to a greater elevation; but the people, in order to cook their victuals more conveniently, have thrown a quantity of stones into the basin, which obstruct the apertures. In these springs they

cook meat, fish, &c. and it is only necessary to suspend the pot over the mouth of the basin for a short time; the victuals thus dressed, acquire more tenderness than by a common fire, and have a very agreeable taste. Milk, however, when thus boiled, loses something of its proper flavour.

This spring throws up water for four or five minutes at a time; and then ceases for an equal space. We placed a Fahrenheit's thermometer in it, for two minutes, and it rose to the 212th degree; after which it attained 218: it even did not stop here, but suddenly ascended higher, and then fell with an astonishing rapidity, as the boiling water became less agitated. At another spring, close by that just mentioned, we found that the water did not contain a greater degree of heat; but that wild ducks' eggs soon became hard in it. The waters of the third spring are highly esteemed by the inhabitants, as an excellent remedy for all kinds of diseases, particularly internal affections; they are of such a moderate heat, as to admit of deglutition, when taken from the spring; they are totally limpid, but yet depose a gravelly and whitish sediment; and pieces of wood, plants, &c. exposed to their action, become incrusted and terminate by petrifaction.

EVAPORATION OF SEA-WATER BY THE THERMAL SPRINGS.

We did not succeed according to our expectation in evaporating sea-water by these springs; that which we boiled in a well-closed iron-pot, began to evaporate at the expiration of ten hours; but the salt deposited was of a red colour. After several trials, we were convinced that the water of these springs, as well as of several others in Iceland, are impregnated with sulphureous martial vapours, which, in our experiments by ebullition, were precipitated. On taking this red salt, after dissolving and filtrating it, we obtained a very fine white salt, which proves that it is always possible to procure white salt by this process; and it would be very desirable for the government to establish salt-pits in this vicinity.

WEATHER PHENOMENA, &c. &c.

In this part of Iceland the weather is subject to much variation. The sea-winds are very frequent and boisterous, insomuch as to incommode both men and animals; while their action is so violent on the rocks near the sea, particularly such as have occasional strata of sand stone, that there may be seen a number of holes, which have been excavated entirely by their influence. The land-winds, or those from the east in general, are more mild here than in other parts of Iceland; because they lose their vio-

fence before they arrive at the western point, where they meet with the sea-breezes, with which they contest a passage for several days, and sometimes for weeks together, which abates their impetuosity. Hence, the winters are rarely severe in the Westfiord, The spring winds, however, are more inimical to vegetation and to cattle.

PHENOMENA IN THE ATMOSPHERE.

There may be seen here, as elsewhere, different phenomena in the atmosphere; but storms do not often occur, and thunder is only heard at a distance. But, on the other hand, the air frequently resounds with extraordinary noises, what is called Lapptelltus, and which means aerial fire, appears particularly at the Westfiord, and in the northern parts of the district of Bardestrand: it is only perceived in winter when the sky is rather loaded with clouds, accompanied by strong winds and falls of snows, though the upper atmosphere is severe. At such times, during the night, the sky seems a mass of fire, or as if lightened incessantly, while the earth, by reflexion, has a similar appearance. The most remarkable aurora borealis occurred on the 25th January, 1762. The circumstance which gives rise to these luminous phenomena, is that the winds blow with impetuosity and repel into the upper air a great quantity of snow, which becomes luminous by the light that remains in the atmosphere. The inhabitants, who are ignorant of these causes, are terrified at their effects, and take the aurora borealis to be lightning at a distance. It is, however, so far dangerous, that it frightens cattle extremely, particularly horses, whom it often drives mad, when they run wildly amongst the mountains, and meet their death by leaping over the rocky elevations.

Amongst the rocks in this district is a chain called Froellah-land, which means mountains heaped up by the giants: they are principally composed of basaltes arranged with order, and it might be added, with art, since they appear to be only a variety of the *Saxum Basaltiforme griseum*. The most remarkable difference in this chain of rocks is, that some of the strata are not more than from six inches to a foot in thickness, and that they are disposed in horizontal layers, as compact and even as if they had been placed by the most scientific architect, and cut by the chisel: each separation at the extremity is from six to twelve feet in length. These edifices of nature might be taken for long walls of masonry: they extend to nearly two miles across the mountains, at the extremities of which they may be seen in the gulphs. They also project very far into the sea, where there are isles and creeks.

PETRIFIED WOOD.

In Iceland real petrifications are very seldom to be met with, except where they are produced by subterraneous fires or hot springs. There are, however, in the rocks near Bardestrand, some vast strata of petrified ebony*. In this spot is an immense cavern, which sinks two hundred fathoms into the mountain, and in which a small river takes its course. The entrance of the cavern is to the southward; and to the west it becomes very steep: its height is one hundred and seventy-five feet; and that of the mountain, which is composed of different strata of rock, is seven hundred and fifty-four feet. These strata, with respect to the substance which forms them, are in size and compactness very regular, and are parallel with the shore: they are composed of rocks amalgamated with ferruginous particles, and intersected by light strata of brownish turf, as well as by hard clay mixed with sand. The ebony wood (or, as it is called, *surtarbrand*, from the name of the mountain which contains it) is easy to be distinguished at a distance, on account of its black colour: it is principally found to the left of the entrance of the cavern, above the first four stratifications; and from the best opinion we could form, these were about one hundred and twenty-six feet long, by two, three, or four in thickness. The uppermost stratum is twenty-five feet above the level of the river, and consists of a thick kind of wood, in which are many ferruginous particles; the second is better, having a finer grain; but the two inferior strata surpass the others, as they are less stony, and not so much mixed with heterogeneous substances.

This singular wood appears again in a grotto in the Forstahl, near Arnarfiord. We were induced to repair to this grotto, from hearing that it contained a quantity of sea-coal; but the substance taken for coal proves to be nothing else than the Iceland ebony mixed with a kind of fat and black slate, which is very compact. This mass may indeed be used as fuel, but it partakes only in a small degree of the quality of the real coal found in the surtarbrand. To the left, on a small eminence composed of lightly-heaped rubbish, we observed some strata of the same kind of ebony; but they were very thin, and, as it were, dispersed by chance. A circumstance however very remakable was, that several pieces of wood, fragments of bones, branches of trees, and particularly roots of petrified plants, were discoverable at intervals, which had preserved their shape, though we observed that they were rather pressed or flattened; but, on the other hand, they had acquired a considerable degree of solidity.

* *Lignum succo minerali insalitum condensatumque; an ebonum fossile Islandicum. Worm, Mus. lib.* 1. c. 15.

There is no doubt whatever that this surtarbrand, or ebony, was formerly a species of wood, and that there consequently existed a forest of it in the vicinity where it is found. That it is a wood, is evidently proved from its filaments, buttons, and branches; and no one can venture to assert that it is merely a sport or production of nature. All that remains to be ascertained is, how these forests became the newel of the mountains, or the bed on which repose such enormous masses of rock and entire chains of hills; or how their transmutation into so different a substance from what this wood must have been in its origin, could have been effected. Many arguments might be brought forward in this respect, particularly when we consider the situation, height, and component parts of the different mountains: indeed this ebony may be found in such as do not offer the least vestige of volcanic eruptions; but in the latter situations it is ranged without order, and the strata are of trivial extent. In nearly all these rocks are found fragments of volcanic strata, which have been melted either in part or entirely: these fragments are accompanied with small lava-pebbles, shore-flints, &c. in strata of vegetable mould. Some of the fragments of lava are perceptible in rocks where there is no petrified wood, as well as in those which contain that substance, but they are then commonly found in the upper part. We have no doubt that all these extraordinary effects have proceeded from some terrible subversion: and even that there must have been three successive shocks, each of which has deposited one of the strata of wood which may now be so distinctly remarked. These shocks, as well as many others of equal extent and importance, must have proceeded from fire and water excited and put in action by the effects of the air; there must also have been three overthrows, or complete subversions, in order to accumulate the three enormous masses of rock, and to form a colossal wall so even and wonderful in its structure.

With respect to the change which this wood has undergone by becoming totally black, and in substance like horn, it is well known that similar effects of nature have been observed in other parts of the world. Mummies have been preserved for thousands of years, partly by bitumen, and partly by means of exsiccation; and in mines and spots that have given way we often meet with carcases, wood, and other objects which have not undergone the least alteration, because they had imbibed a mineral juice which has embalmed and hardened them, so as to preserve them entire as long as they are not exposed to the action of the air. It has been discovered, that vitriolic acid is one of the best agents for preventing bodies from corruption; and the ebony has probably acquired its hardness from being ex-

posed to this acid, which exists every where in its vicinity. On boiling or burning this wood, we may immediately discover the acid with which it is impregnated; and its black colour is a proof of what is here advanced, since it can only arise from the combination that takes place between the vegetable juices and the vitriol.

PLANTS OF THE WESTERN PARTS OF ICELAND.

Among the plants which are seldom met with in the territory of Dale, in the western part of Iceland, are the following: *Epilobium latifolium; Viola tricolor (Fl. Sv.* 721*); Campanula rotundifolia, foliis radicalibus rotundis, reniformis (Fl. Succ.* 176*); Cochlearia rotundifolia; Urtica minor; Angeligica Archangelica (Fl. Lappon.* 101*); Imperatoria ostruthium; Plantago latifolia; Trifolium pratense, flore albo; Galium foliis quaternis, flore albo; Saxifraga autumnalis*; *Gnaphalia, divicum, alpinum, sylvaticum (Fl. Sv.* 572, 673, *et* 675); *Sibbaldia procumbens; Aegopodium podagearia; Spiræa ulmaria; Echium vulgare; Nasturtium pratense; Vicea cracea; Rhodiola; Veronica officinalis; Veronica spicata; Holcus odoratus (Fl. Sv.* 70.); *Arundo arenaria (Fl. Sv.* 102*); Galium verum, foliis denis, undenis, et duodenis; Galium Aperine (Fl. Sv.* 120*); Trifolium fibrinum (Menianthes trifolia); Gentiana autumnalis; Gentiana nivalis; Gentiana verna; et Gentiana pneamonanthe; Parnassia triglichia (palustre, Fl. Sv.* 298*); Epilobium foliis ovato-acuminatis serratis (fetragonum); Epilobium palustre; Linnæi Poligonum bistorta, foliis lanceolatis alternis; Bulbi scapi; Pyrola minor racemosa; Saxifraga oppositi folia (Fl. Sv.* 359*); Saxifraga cotyledon, foliis radicælibus subrotundis, serraturis cartilagineis (Fl. Lapp.* 177*); Cucubalis acaulis (Silenc. Fl. Lapp.* 185*); Ledam annum aere (Fl. Sv.* 391*); Dryas octopetala; Geum rivale*; *Ranunculus (nivalis) pygmæus; Ranunculus aquaticus, foliis omnibus capillaceis; Bartsia Alpina; Nasturtium aquaticum; Hieracium murorum (Fl. Sv.* 637); *Hieracium Alpinum (ibid.* 632*); et Hieracium umbellatum, foliis linearibus (ibid.* 639*); Cotula fœtida*; *Viola (palustris) acaulis, foliis reniformibus (Fl. Sv.* 733*); Osmunda lunaria; Equisetum foliis octagonis; Lycopodium selago; et Lycopodium clavatum, cum semine sulphuris vegetabilis (Fl. Sv.* 859*); Lichenes Islandici esculenti; Tremel la nostoch; Urtica maxima (Fl. Lappon* 374*);* and *Sorbus accaparia,* and others not worthy of particular specification.

REMARKS ON THE INHABITANTS OF THIS NEIGHBOURHOOD.

There is no great distinction to be made between the inhabitants of the district of Dale and those of the jurisdiction of Bongarfiord. In the vicinity of Breedefiord and the isles the people are very active and industrious, particularly in agricultural pursuits: they devote their attention much more to the rearing of cattle than to fishing; but those who live northwards from Bardestrand to Cape Horn adopt the latter employment, and in general are neither so gay nor so active as the others. Such as are in easy circumstances continue to rear a few sheep, and in winter make the wool into clothes for themselves, as well as into stuffs for commerce. The poorer people, who have neither wool, fish, oil, nor fat for their lamps, are obliged in that season to sleep most of their time. Those who reside in the western part of the gulf, are very gentle in their manners, and disputes rarely occur among them. They are a religious, well-informed people, and have a good enunciation.

On the contrary, the inhabitants of the northern part of Arnarfiord are large and ruddy. They are well-made, courageous, and much disposed to fight when irritated or offended. They have retained in their costume the ancient fashion of the country, namely, white clothes in the antique style; those of Onundfiord, situated to the north of the port of Dyrefiord, let the beard grow, and also adopt the old mode of dressing. The people in the vicinity of Breedefiord and Arnarfiord, are much attached to the study of natural history, and are well skilled in botany and mineralogy.

At a certain age, the people in this part of Iceland are particularly subject to diseases of the chest, which terminate in consumption: they are likewise much affected with the scurvy, to which most of their other diseases owe their origin. In the Westfiord violent leprosy is not uncommon: it attacks the head and face, which become covered with lumps, and the gums swell, though without causing a looseness of the teeth; but it is remarkable, that amidst all these attacks, the patient seldom feels pain. In this disease an insensibility occurs in all the limbs, and the treatment is simply the same as if the complaint was external. When the patient is interrogated, he declares that he scarcely feels any pain, but merely a heaviness of the body, which renders any strong exercise disagreeable. The causes of this disorder are supposed to arise from the vicinity of the villages to the sea, in consequence of which the air is always impregnated with saline vapours; besides which, the ground is nothing but pure rock, so that the fishermen cannot take the exercise of riding. To this may be added their sedentary life, and constant

lying down in winter; as well as their feeding on scarcely any thing but fresh fish in summer, and dried fish in the winter season: all of which circumstances injure their health. It will therefore be readily supposed, that these people cannot arrive at a great age: the fishermen never attain more than from fifty to sixty years. It is however remarkable, that the women live much longer, particularly those who have had many children; which probably arises from their never going out to sea, and their taking more exercise in the country.

The houses of these people are much better than those in the southern fisheries and near the Westerjoekkel. In this part long fragments of whalebone are much employed in building not only houses but boats, though these bones are much dearer than timber; but, on the other hand, they will last a century without decaying.

The cabins and drying-houses of these fishermen are much cleaner than in other parts; and they do not exhale so bad a smell, because the entrails and waste parts of the fish are thrown into ditches and covered with sand.

One kind of fuel employed here is, marine weeds mixed with turf and the remains of fish: it however produces but little heat, and is too expensive for general use; their common substitute is therefore the dried dung of cattle.

OF WITCHCRAFT AND OTHER SUPERSTITIONS IN ANCIENT AND MODERN TIMES.

Every person who has read and studied history, is aware of the influence of superstition on the manner of thinking, in the different people who inhabit our globe. The reader, however, will doubtless be amused with some details on the spirit of superstition which still exists among the Icelanders.—These insular people have, from the earliest times, entertained the most ridiculous ideas relative to sorcerers and ghosts; but even more enlightened persons in every part of the world have been subject to this charge. There are two sorts of magic in Iceland, which are denominated the black and the white. Under the latter name is in general comprised natural magic, which does not depend upon witchcraft, and which the Icelanders rarely adopt; but they understand by white magic, an operation which partly consists of natural means, and in which they seek to discover wonderful and supernatural events by acts of devotion and superstition, accompanied with exorcisms and invocations. This kind of magic may therefore, when not applied for evil purposes, simply excite the weak and credulous man to the fear of God, and to consequent acts of piety. This was indeed a sort of religious magic used in pagan times, as well as since the esta-

blishment of christianity. From time immemorial, superstitious means were employed in Iceland for the cure of diseases. To bleed, letting a small quantity of blood, and then closing the puncture; to cure those possessed by exorcising the evil spirits; and for similar purposes, such magic was constantly adopted. There was a certain invocation or formula adhered to for each respective purpose; which was accompanied by the ringing of bells, the ornamenting of the altars, and the distribution of sacred bread, wine, water, incense, &c.

In more modern times they adopted other methods; such as forming a cross with the fingers, by disposing them in different ways; making use of the bread and wine employed at the altar; reciting prayers or psalms, and wearing them in writing on the breast: to all of which they attributed curative virtues. We find here but few traces of divination; though there may be remarked some vestiges of chiromancy, and several copies of the figures and hieroglyphics which relate to that art. There are likewise several ancient writings on astrology; and the most illiterate of the people believe that there is no disease or evil which such superstitious juggling cannot remove: they entertain similar ideas of the supernatural virtues of certain plants and stones, as well as of various remedies derived from the animal kingdom. Most of these absurd opinions seem to have originated from false translations of foreign books, which were introduced in the thirteenth and fourteenth centuries; and which were approved by the clergy, who themselves adhered most rigidly to their contents.

Black magic is that which is generally described by the word necromancy, as it is supposed to be effected by the aid of evil spirits. In ancient times it was much practised in Norway, but it has not been known in Iceland for more than two centuries. It is effected in two different ways, viz. by magical characters, and by poetry; but in great operations they join both together. In the histories of *Edden* and *Sn. Sturleson*, we learn that Odin was the first and greatest philosopher of the North; which is confirmed in several other annals, that mention all the ceremonies which he practised. These two kinds of magic were not merely in vogue in the times of paganism, but existed long after the introduction of christianity.

OF THE MAGIC IN THE TIME OF PAGANISM.

The word *blot* signifies, in the North, the religion of the pagans. They adored idols, and made sacrifices to them in order to obtain their wishes; and this idolatry was tolerated by the laws. The greatest evil was, that they intermixed magic with their religious ceremonies. This idolatry was connected with

various objects. *Disa blot* consisted in sacrificing to a goddess called *Disen*, to whom they attributed the power of deciding the fate of mortals. Their *Alsa blot* was a sacrifice to the spirits of rivers and fields, in order that they might succeed in their culture, or that misfortune might fall upon those of an enemy. The most ancient and terrible species of magic was called *Seidur;* and was effected by fire, poetry, and singing: by this means those who were present, and even absent, who were the objects of the mysteries, became as it were bewitched, mad, and overwhelmed with misfortune. *Sn. Sturleson* says, that Odin himself disapproved of this vile and dangerous art, which could not fail to displease the gods, as well as the moral part of mankind. It was after this that they ceased to make sacrifices to the idols; which proves that magic, even in pagan times, was held in abhorrence by all persons capable of reflection. They particularly detested the Seidur; and *Harald Haarfagar* caused his own son to be burnt, as well as his partisans, on being convicted of having formed a society for practising this art. It is forbidden in the most ancient laws of Iceland and the North. The ordinary punishment inflicted on those who exercised it, was to enclose them in a sack, stone them to death, burn the corpse, and throw the ashes into the sea. In general they burned the sorcerer or magicians, and scattered their ashes before the wind; in order, as they asserted, that they might not return to torment the living. For in that time they had belief in the appearance of ghosts; doubtless because Odin boasted that his art enabled him to make the dead appear, and that he had even learnt in what manner to *lay* spirits. But it is known that these ridiculous ideas likewise took root during the barbarous ages in all other nations; and no person is ignorant of the tales about goblins. The more learned men in Iceland at the period in question employed themselves in writing on this subject, and several of their dissertations still remain.

OF THE MAGIC IN THE EARLIEST TIMES OF CHRISTIANITY.

The magic of the early christian ages was the same as that of pagan times, and was practised only in secret: it was in use as much in Iceland as in Norway; and the magicians made choice of the few nights that preceded any grand festival, to perform their operations. This kind of magic is called in the ancient code of northern laws *Uteseter;* which means "outside the house." Odin himself practised it, and *Sn. Sturleson* mentions this remarkable circumstance respecting it. Those who performed their incantations in the open air were supposed to converse with spirits who commonly advised them to do ill; on which account they

were considered as culpable as those who exercised the black art, or that whose object was the raising of ghosts and phantoms. In the times of paganism, when there was no code of law, the proceedings against such as practised the black art were very short: they were punished with all possible rigour, but the other magicians were not molested. After the introduction of christianity, a scrupulous difference was made between the different kinds of magic; and the punishment was more or less severe, according to the extent of the offence. It appears that they knew little in Denmark of either magic or witchcraft; though in Sweden both were prevalent, and the laws against them were summary and rigid. The code of laws of the North, and of Iceland, prove that magic was generally practised throughout those countries, and that a number of malevolent persons exercised it notwithstanding the existing penalties. It was not till towards the middle age that sorcerers and magicians were burnt. It will scarcely be credited, that at the period in question many women were accustomed to bite or cut off one of the fingers of their children from a persuasion that they would thus obtain a long life: for this conduct they were punished by a simple fine.

The punishment of burning was inflicted on those who sacrificed to or worshipped idols, and on those who pretended to tell fortunes, or perform other species of witchcraft; while such as gave them residence, or took their part, suffered the same fate. They were also placed out of the protection of the laws, by a declaration directing them to be considered as assassins who merited death. Any person who exercised magic in the way of imprecation or other sorcery, with a view of injuring men or cattle, was punished with death; and whoever suspended certain stones about himself or his animals to operate as amulets for the purpose of preventing or curing diseases by supernatural effects, was placed beyond the protection of the laws. It was also believed that such a man could not fail to become mad by the operation of the evil spirit; and those who happened to be present during similar acts of sorcery, and did not prevent them, were subjected to a like punishment.

In the early ages of christianity, the law continued equally rigorous against those who made use of amulets from an opinion that such charms received supernatural virtues from the idols; but this rigour ceased when the christians themselves began to use various stones and plants in their religious ceremonies.

OF THE MAGIC IN MODERN TIMES.

In the later ages, after the reformation, magic and witchcraft seemed to revive, with the superstitious ceremonies which ill-

disposed people borrowed from the ancient forms of catholic worship: there then arose an ancient species of necromancy, notwithstanding all the severity employed to prevent it, and to destroy every thing which related to its operations. They endeavoured to combine with this the pagan system of magic, but they failed for want of knowing it: they were, therefore, obliged to invent their own characters; and it was easy for the malevolent to use imprecations, and to raise pretended evil spirits, in order to produce an effect upon weak minds. The superstitious people gave credit to these projects, and suffered themselves to be deluded by such frauds and gesticulations. This kind of magicians had greatly increased since the seventeenth century, which may be attributed to two well-known causes. The first is, that the prejudiced, and the persons in authority in the country, being too rational to fear such proceedings, endeavoured to maintain the opinion which the people at large had conceived of the effects of magic, in order to keep them in a state of dependence. In this they perfectly succeeded: for they were not only feared, but were considered to be greater sorcerers than those who directly professed the art of magic. When they perceived that this stratagem succeeded, they considered that it would be much better for the people to retain these ideas; because this strengthened their own power, and augmented the veneration which was paid to them. They did not indeed employ themselves with magic; but, on certain occasions, they knew how to give to suspicious ceremonies or events a mysterious appearance, from which they derived advantage: they made the people believe that they had divined such circumstances before-hand, and that they were so well informed in this art as to be able to produce great effects by occult means. Others still more cunning asserted, that if they examined and interrogated the magicians, it was only for form; since those knew already what those had done, and the means they had employed. Thus the people believed that there were several kinds of witchcraft, which the learned and people of rank were alone able to understand by means of Latin and other foreign books.

In order to give an idea of some of their species of magic, we shall begin by that which they call *Finskgalder*; which, as they asserted, was brought into the country by an Icelandic magician who had made a voyage to Lapland for the purpose. This consisted in possessing a spirit which bore the form of a worm or a fly: but the pretended voyage never took place. It was also said that queen Gunnhild and others went to Lapland for the express purpose of studying magic, and assisting at the operations of the sorcerers.

Another kind consisted in interpreting the songs of birds;

which was the magic practised by the great people, particularly the princes and kings. The crows were considered as the birds best informed of affairs of state, and capable of predicting future events; but as there are none of those birds in Iceland, the ravens fulfil this office. They had also a class of magic analogous to that employed to conjure up the dead. They made choice of a friend, or other intelligent person, who promised to appear to them after his death, and give an account of whatever was interesting: and they considered his first visit as pregnant with danger. The utmost degree of magic however in those times, consisted of what they called *Karra Kalf:* this was the evil spirit, who appeared in the form of a calf newly-born, and not yet cleaned by the dam. Those who desired initiation in this mystery, were compelled to perform that operation with their tongue; by which they arrived at a complete knowledge of the art.

OF THE LAST STATE OF MAGIC IN ICELAND.

We shall pass over the various ceremonies and different modes employed by the modern magicians. The *Runnes* were always the principal agents in their operations, as they were in ancient times. They also used other characters, or rather drawings and paintings: such, for example, as Aaron's rod; Solomon's seal; Thor's hammer; and also the *Sprota,* a long thin wand, which they asserted to possess the power of opening rocks, eminences, and mountains, on striking them. This magic wand also procured the means of conversing with the gnomes. All these various operations were much in vogue in the latter ages, and there still remain traces of them throughout Iceland. If a person fell sick, it was immediately attributed to witchcraft. There were scarcely any houses that were not said to be haunted; and every one believed he saw the dead returning to disturb the living. In short, every thing that was bad, whether melancholy, vapours, epilepsy, convulsions, palsy, or apoplexy, was attributed to the manœuvres of the evil spirit. The priests and people of authority endeavoured to destroy this remnant of superstition, but they did not succeed: because it was seen that they believed in it themselves, and were as much terrified at its effects as the common people. It was at last conceived that nothing would do but severity of punishment; and they then began to burn those who were thus guilty of no other crime than a weak mind. As soon as a man was accused of having bewitched others, or even animals, he was condemned without mercy to the stake. There is no doubt that this excessive severity was derived from the Germans, as well as from the ancient Swedish laws. Ten persons suffered death in this way in the space of thirty years, from 1660 to 1690. Most of these unfortunate people were vagrants; and very few

of them were convicted of practising sorcery, while there is no doubt that several were perfectly innocent. At length the persons of authority in the country began to see the odious nature of the laws in question; and in 1690 there was notified to the tribunals of the country a decree from the king, commanding that the proceedings against every person accused of sorcery should be laid before his majesty for revision, previous to passing sentence.

WHALE-HUNTING.

In this part of Iceland they often hunt the whales in such a manner as to drive them on shore, where they are killed. The flesh of this fish has by no means a disagreeable taste, but is very similar to beef; and the young whales of the species which are good to eat, even have a very delicate flavour. Its fat, after being salted down, is used for the same purposes as lard; to which it is preferable, both in point of taste and because it will keep for four or five years.

Although the Icelanders have at their choice many isles which afford a great variety of productions, it must at the same time be admitted that they are very laborious and vigorous; and that they understand domestic economy in a wonderful degree, much more so indeed than many other nations could do if placed in a similar situation. They are besides very sober; and clean in the preparation of their food and utensils, a circumstance which rarely occurs among fishermen by profession. To their praise it must be added, that they are very hospitable towards strangers, as well As to the inhabitants of the interior of the islands, who come to trade with them, or to pass the Gulf of Breedfiord. It frequently happens that seven or eight strangers meet together at one time in the houses of these people, and remain with them for a week together, on account of the badness of the weather. As soon as they arrive, the generous cottagers dry their clothes, and lodge and feed them with the greatest pleasure; while in the evenings they amuse them by reciting historical anecdotes, or playing with them at chess, to pass away the time as agreeably as possible. When the strangers set off, they constantly refuse all kind of payment whatever; but if they are obliged to undertake the passage with them, in their canoes, they then accept of a liberal compensation for their labour and time. Hospitality is, however, the characteristic of the whole country; even to such a degree, that when a traveller puts up any where for the night, they do not require any thing of him either for his supper or his bed. This friendly disposition is carried so far in the jurisdiction of Bardestrand, that when a stranger enters a house before dinner, or in the middle of the day, simply to rest himself,

with the intention of continuing his journey, he finds it impossible to depart without accepting a dinner. When persons of condition or those who hold official situations travel in the southern quarter, and sleep at the house of a peasant, they give him on their departure whatever they think proper. It should finally be observed, that the greatest riches of these insular people consist in the productions of the country, which they employ for themselves and others. There are very few rich among them; but most of them live at their ease, and very poor families are seldom to be met with.

Our travellers now undertook a journey to the Hornestrand, or along the coast to the North Cape. Near the bay of Kolla, at the door of the church, they met with a remarkable ancient monument: it was a flat round plate, about two feet and a half in diameter; and containing forty-two characters, which they could not decypher, but considered as magical hieroglyphics. In the middle of the plate was the figure of a man on horseback with cuirasses, and holding in his hand a naked sword. The horse is represented in full gallop, and surrounded with stars: at its feet is a quadruped with a long tail, and covered with scales; it resembles an otter, and has several horns on its head. This animal is pierced with a javelin, and by its side is the figure of a woman wearing on her head a bonnet nearly in the shape of a crown; she is prostrate before the cavalier. The words which the characters compose are repeated four times, and fill the line which forms a circle. The writing seems to denote an ancient German dialect of the tenth or eleventh century, or perhaps of a still earlier period. Some other figures on this plate seem to represent the history of Saint George.

EXTRAORDINARY HURRICANES.

On the 29th August, being near Reykefiord, about half a mile from the port, there arose a terrible hurricane, which detached from the shore an enormous mass of rock, to which was affixed the cable of a ship. The inhabitants in the vicinity attributed this wind to the effects of witchcraft; as there resided near the spot a very adroit and sensible peasant, whom they regarded as a great magician. We amused ourselves in talking with him on magic and supernatural events: he had no aversion to open his mind to us, and answered all our questions with much frankness and sagacity. He possessed very considerable knowledge of the different stones and plants in this part of the country.

In the evening, after the wind had subsided, we heard a very loud noise in the air; which was succeeded by a dreadful storm which beat down our tent, and broke the stakes that supported it, though they were retained by a number of cords

and stones. This hurricane arose in an instant, and subsided in the same sudden manner. It was, however, impossible to check the ridiculous opinion which the inhabitants entertained; and they continued to believe that sorcery was the occasion of all their alarms, notwithstanding our endeavours to convince them that the hurricane originated entirely from the state of the atmosphere.

DANGEROUS ASCENT OF THE DRANGAR.

On the 31st August we crossed the Gulf of Ofeig, in order to arrive at Drangue, by travelling along the shores; and on reaching Angenaes we had a full view of the fine rock of Drangar, from which the *glacier* takes its name. This promontory is composed of seven points: those in front are lowest, and extend into the sea from east to west; the four to the east, on the contrary, are much higher and very pointed. The mountain itself is from three to four hundred fathoms in height; but the Drangar has not by far so great an elevation. A very dangerous road runs between these mountainous summits; but the inhabitants nevertheless pass along it to go to their church at Aarnaes.

The Drangue-Viig, situated between Eugenæs and the Drangar, is an agreeable country, covered with herbage, and was formerly inhabited: it contains a quantity of timber for ship building, and a few islets which are near the shore afford abundant supplies of sea-fowls' eggs.

There is no road which either leads to or crosses these rocks. We attempted to climb them, as we were assured by our guide that others had succeeded in ascending them on horseback. This undertaking, however, was equally difficult and dangerous: for we were obliged to go on our hands and knees, and to drag our horses after us; as, though they were accustomed to walk on rocks, it was here necessary every instant to assist them, and prevent them from slipping or stumbling, which they frequently did in the crevices and holes. We were often compelled to get over a kind of steps or projections, which were upwards of four feet in height. When our horses attempted to leap up them, the baggage with which they were loaded fell off, and every thing brittle which it contained was sure to be broken.—Towards night, however, we succeeded in gaining the summit. We found it level; and it appeared like a floor laid with slate, in pentagons and heptagons: its composition, on the whole, was exactly similar to that of the basaltic rocks already mentioned.

To return seemed to be attended with as much danger as our ascent. The declivity was very steep; and what rendered it more difficult and dangerous was, that we were obliged to per-

form it in the dark, and were exposed every instant to violent gusts of wind. We were forced several times to carry the loads of our horses, to enable them to continue their passage: and it was necessary to make a number of windings before we could arrive at the farm; which was five miles distant, and was the only habitation on this coast. In our way thither, we had little more satisfaction or rest than during the disagreeable descent we had just performed; for it poured with rain, and the wind was exceedingly high. There came occasionally some terrible gusts towards that part of the mountain that contained the farm, and where we had erected our tent. We heard during the night several disruptions; occasioned by the force of the wind, which detached large fragments from the rocks. While the inhabitants of this farm were relating to us that on such occasions considerable masses of stone were separated with a terrific crash, we heard a tremendous noise in the direction of the rock, resembling the repeated firing of artillery. On looking towards the spot we saw a cloud of smoke, or rather dust, rising into the air, and which proceeded from a new excavation in the mountain. Every person immediately ran, with a view to save himself, into the open fields. Our own people, who had never been divested of fear and terror during the journey, asserted, that they saw a mass roll from the top of the mountain. At first we could not distinguish the cause of the thick cloud of dust that obscured the air: but we soon remarked that this fall had taken place directly before us; therefore we could not escape in that direction, and we did not know on which side to make off, in order to avoid the danger. At length we discovered the place whence the fragment had been detached from the rock. The few cattle belonging to the farm, and our horses in particular, ran backward and forwards in the field as if they were mad. Happily, this enormous mass of stone was propelled perpendicularly from the mountain; and, falling in a direct line upon a rock a little above our tent, it broke into a thousand pieces.

PRESENT MODE OF FLOATING WOOD.

The Icelanders call the present mode of conveying wood along the coast by water, Stokafarse; but it is not an advantageous method, and the passage is dangerous. The inhabitants of the district of Isefiord, and the northern part of Bardestrand, make these voyages in large canoes, containing eight or ten men. On reaching the coast they make choice of the best timber, with which they load their boat; and, making a raft of the overplus, drag this after them. When they have a quick passage, and meet with no accident, their expences are well paid; otherwise this is not the case. Sometimes their vessels are wrecked: and

they are not unfrequently, in order to prevent such a misfortune, obliged to throw a part of their timber overboard, and to cut away and abandon the raft; for the canoes are so small and weak, that they cannot carry a sail in strong winds. But the fact is, that from the time when the Icelanders abandoned the praams used by their ancestors, they were in want of wood for building their houses and boats, and were obliged to make use of unsafe and fragile canoes.

GLACIER OF DRANGUE.

On the 5th September we arrived from the Gruna-Viig, at Sneefiaelds, where we remained till the 10th on account of the bad weather. After a strong wind there came on such a violent storm of snow, that we were obliged incessantly to remove it from our tent with shovels, without which precaution we should have been buried beneath it.

This country is always exposed to considerable falls of snow, which take place in summer as well as winter: on this account doubtless it has received the name of Sneefiaeldstrand. These storms of snow are probably occasioned by the vicinity of the glacier of Drangue. We could not but remark the striking difference between the countries situated towards the northern, and those of the southern part: here the fields and rocks were covered with thick snow; while on the other side there was a radiant sun with mild air. From the same reason the coast of Sneefiaelds is exposed to the dangerous falling of considerable masses of snow, collected on the rocks; which destroy both men and beast, and often carry away entire houses.

The inhabited part here consists only of a small village between the mountain and the shore: it terminates near the bay of Lone, which we were obliged to cross during a violent hurricane. Here the glacier of Drangue takes its principal base in an ascent from the shore; filing off between two high mountains, the summits of which cause the glacier constantly to propel so much snow to the coast of Sneefiaelds. If we form an idea of the extent of this glacier, which is twelve miles long by six wide, and consider at the same time that its site is contiguous to the villages and the sea, it will not be surprising that it should occasion the frequent recurrence of snow, fog, frost, and variable weather. We cannot observe without admiration how often this glacier is subject to increase and diminution: those who reside in its vicinity agree in stating that the ice is now to be seen where twenty years since there was a rich and verdant soil. The continued winds which have prevailed of late years to the east and north-east of the glacier, are the principal cause of this increase of congelation. The people in this

district pretend that the ice decreases towards the foot of the mountain; but they do not observe that this change proceeds from a thaw, which diminishes its extent towards the fields. The muddy bottom beneath these heaps of ice is likewise exposed to variations: occasioned by the passage of currents of water, which carry with them a great quantity of soil, and thus produce a vast aperture, through which the rays of the sun can penetrate and partly melt the ice; which, thus possessing no longer a sufficient thickness to support their super-posed mass, often break and sink down.

ON THE PASSAGE OF MASSES OF ICE.

We cannot refrain from mentioning the conveyance of masses of ice from Greenland; since they are often carried as far as these roads, and particularly towards Isefiord and the coasts of the North Cape, or Cape Nord. We learn by the ancient annals of Iceland that this circumstance has always occurred, and that from it the Isefiord derived its name. Some time afterwards they gave the name of Iceland to the whole country, because the inhabitants called these masses Hav-Iis. It is incontestable, that this ice comes from the coast of Greenland, since every one knows of the enormous heaps that are formed there. They are conveyed towards Iceland by the west and north-west winds; and not only fill all the bays, but also cover the sea to such an extent, that from the summits of the highest hills, the extremities of the ice can scarcely be distinguished. These masses are like mountains; so enormous indeed, that they penetrate from sixty to eighty fathoms into the water, and rise several fathoms above the surface. This conveyance of ice takes place with astonishing rapidity, and is accompanied with a crashing noise that may be heard at a distance. The shock of the fragments, when they meet together, is terrible; so much so, that the timber which they carry with them often takes fire by the force of the friction. These heaps of ice frequently carry off in their course little isles and projecting portions of land, as well as masses of rock against which they happen to strike. They cause an alteration in the bottom of the sea near the main land; and disjoin promontories, and salient parts of mountains and rocks. When they are unfortunately driven up the bays, towards the interior of the country, the poor inhabitants are convinced that they shall experience a bad year, an excessive scarcity of provisions, and every concomitant misery. When a severe dearth is occasioned by the heaps of ice which have been propelled towards the shore of the northern part of Iceland, the southern districts also suffer from it, though the ice does not reach them.

The north part of the island is likewise exposed to rigorous

frosts, and, at intervals, to moist and cloudy weather: it also snows and freezes in the midst of summer. The grass is thin, and difficult to dry; and the cattle are lean, and often shed their hair: on the other hand, the inhabitants are very liable to leprosy and the itch. We shall mention a remarkable circumstance; which is, that as long as the masses of ice are not fixed, but are moved backwards and forwards in the sea, the weather remains variable and stormy; while the currents, and the ebbing and flowing of the tide, are affected and altered in an astonishing manner; but as soon as the ice is fixed to the bottom of the sea, and the waters carry off the detached lumps, then every thing seems to gain its level; the weather becomes calm, and the air moist and foggy. This conveyance of ice exposes the country to other very serious inconveniences: the bears come over on the ice to hunt for sharks; but when it breaks, they are taken by surprise, and carried off on the detached lumps. Before, however, this takes place, they commit great ravages among the sheep; which obliges the inhabitants to unite in troops to destroy them with their lances. These bears, nevertheless, do not pass the summer in Iceland; but take advantage of the time when the ice, driven towards the west of the island, begins to break off, and make towards it to reimbark. Much has been said of the cunning and instinct of this animal; and it is asserted, that when the ice begins to return, and thus leaves it by surprise, it climbs to the summit of the mountains to discover in what direction the masses are moving off, and immediately swims after them. The colour of these bears is generally white, or rusty.

With respect to the advantages which the inhabitants derive from these masses of ice, though they do not always drift on their coasts,—these consist in their affording them a quantity of floating timber, which they convey in their course; and a number of whales, as well dead as living. The latter, being caught within the fragments of the ice, take advantage to slip out at every aperture, in order to respire; and when they come near to land, the inhabitants kill them with their lances, or with blows of the hatchet: but they are obliged to take care not to perforate the belly, in which case the whale would sink to the bottom. This ice also conveys with it a number of sharks, which are taken upon the ice itself: for when thus embarrassed, they suffer persons to approach them without resistance. The inhabitants procure, besides, various other species of fish: but particularly the stock-fish, which assemble and keep near those masses of ice that sink deep in the water. These fish always remain with one side towards the ice, in consequence of which they become blind on that side; for on observing them, the eye next to the ice is found to be entirely dimned, and covered with a viscous matter. The

cyclopteri also, when taken near the ice, have but one eye. The rapidity with which these masses move in their course, is a circumstance very remarkable, particularly when the wind is contrary; and when it corresponds with the current, there is no boat in full sail which can proceed with the same celerity. This swiftness of motion may be accounted for by the depth which the ice sinks in the water, by which it does not preserve any great elevation above the surface: hence the current has more power over it than the wind. We cannot be less astonished at the duration of this ice; for some masses, when they touch the bottom of the sea, remain there upwards of a year, though the part that projects above the water soon melts by the heat of the sun. When the weather becomes mild, there are at first formed in these mountains of ice a number of holes, about six or eight feet deep, and wide enough to contain the arm: these holes are filled with a limpid water, which has a very agreeable flavour, and is excellent for allaying thirst. The reason why this ice does not melt easily is, that it is very hard, compact, and contains no air-bubbles; while, being collected in very large and thick masses, it is preserved by its natural coldness. It also reflects from its smooth and shining surface the rays of the sun; and is continually in the sea-water, which in this northern latitude is tolerably salt. It is likewise very white; and contains but very few heterogeneous particles, which would contribute to its solution. On examining the clefts in the surface of the ice and its sides, it might be supposed to be of a greenish colour; but this arises only from the rarified state of the light. There may be distinguished two kinds of ice, which separate from each other in their course: the first is called *Hallu ice*, which is even, and much thinner than the other, for it is not more than from one to three toises in thickness; so that it appears to have been formed in the sea, near the extremity of a glacier. The inhabitants rejoice when they see this kind of ice arrive, because it disperses and melts in a short space of time. The other kind is the enormous masses of ice already mentioned; which are as large as rocks, and appear to have been detached from the glaciers where they were formed, and where they gradually acquired their enormous size.

There are also many different opinions respecting this ice, but all of them are unfounded: we shall mention only two, which have been adopted by foreigners and learned men. The first is, that this ice consists mostly of saltpetre, and that it might be employed in the manufacture of gunpowder. But if these persons could procure a piece of the ice in question, they would soon be convinced of their error. The other opinion, though still more improbable and even ridiculous, has neverthe-

less found a number of partisans in an age so enlightened as our own; and what is still more singular, many celebrated naturalists mention it in their writings: they say that this ice, and particularly the large lumps from the glaciers, takes fire, and may be used as fuel. We shall merely state, from our own experience, that this is false. The circumstance that gave rise to this idea was, that a clear flame had been seen to come from the ice; and this happens sometimes in the vicinity of Iceland, where the probable cause has been discovered. It can only be attributed to what we have already stated; namely, to the lumps of drifted wood which get between the ice, and take fire by the great pressure and considerable friction they experience. The ice may be seen at a distance, though the wood is imperceptible; and hence the idea has occurred, that it is the ice which burns.

FOXES.

We have already spoken of the sagacity of this animal, and its manner of procuring food; but the additional tales which we heard of it in this part, induce us to resume the subject. When a fox perceives that his hole is discovered, he takes the first favourable opportunity to retire to another spot. The inhabitants of the vicinity then take great pains in watching him night and day, that they may kill him as he passes out, and destroy the young in the hole. This animal abounds in the mountains, where the inhabitants hunt him in winter. In summer he retires to the rocks, to feed on birds and their eggs; while in winter he supports himself on the spawn of fish which he finds on the shore, as well as on muscles and other shell-fish. It is very surprising that he also eats roots; particularly those of the *Arundo* and the *Angelica*, which grow in the clefts and ridges of the mountains. We think however that the foxes which feed on these plants must be a different species from the others: the people call them Gras-tofur. The shepherds are anxious to distinguish this kind, and to prevent their dogs from doing them any harm.

If what is related of the white fox in this part of the country be true, his sagacity and instinct surpass every thing. He hunts the white water-fowl of the largest species; and in order to catch them, he waits till low water, when the bird returns fatigued with searching for its prey, and perhaps loaded with food. These fowl then collect in troops on a sand bank near the sea, to repose and sleep. The fox takes advantage of this circumstance, to creep in among them: but to gain them undiscovered, he moves gently backwards with his tail erect; so that if the birds should happen to wake, they perceive nothing but the white tail

in the air, and take him for one of their own species. When the fox gets to them, he seizes those that are nearest, and the others fly off.

These animals sometimes quit the main land to proceed to the isles, particularly those near Breedefiord. They also get upon the masses of ice, in order to be conveyed to such isles as are more distant: though this method does not always produce the desired effect; for it often happens that the ice does not stop near the isles, but carries the foxes out to sea. We were ocular witnesses of such a circumstance; for we one day saw four foxes sitting on a rock of ice, one behind the other, the current carrying them rapidly out to sea. When a fox succeeds in gaining an island, he commits considerable ravages there, and obliges the birds to desert it. As soon as the inhabitants find he has landed, they collect in the neighbouring isles in canoes (taking advantage of the spring, before the birds have arrived) and hunt the fox till they either catch him or force him to take to the sea. When this animal swims, he keeps his tail in the air as long as possible; and as soon as he lets it trail in the water, it may be known that he is fatigued. We were assured that they sometimes hunt him from hole to hole, till he has been found on the shore motionless and apparently dead; and that after taking him into the canoe and landing him on the opposite shore with a view to profit by his skin, he has got up and run away.

FARTHER PARTICULARS OF THE SEAL, OR SEA-DOG.

The principal species of this animal are those which the inhabitants distinguish by the names of *Landselus* and *Utseler;* and the advantages which they derive from it are too important to be passed over.

At Patrickfiord they are accustomed to kill it with the gun: but the animal in consequence becomes timid and difficult to approach; besides which, they thus frighten the birds, and oblige them to abandon the country. Some of the inhabitants of Isefiord have therefore resumed the ancient method of killing the seals with javelins or harpoons. They sell at the following prices: An Utseler costs four Danish marks when it can swim a little and is tolerably fat; but this price is given principally for the skin. The young sea-dogs or seals are sold by weight, principally for their fat; and the price is about five marks for 80lbs., after taking out the intestines. An old Utseler is about two ells and a half in length. They are savage, and it is dangerous to irritate them. With the exception of the lard, the remainder of the body of all the seals has no fixed price; but the young Landselurs, after having cast their first hair, and acquired sufficient strength to swim and feed themselves, cost a mark. The skins,

when well prepared, sell for as much as those of oxen, cows, or rams; they are, however, rather spongy: they are used for shoes. In winter the Landselur contains most fat; as one of these animals then affords from fifty to sixty pounds, but in summer it does not give half that quantity. A pound of lard of the best quality will furnish half a pint of oil; but in general not more than three or four quarts is derived from a *Fördung* of lard, which weighs ten pounds.

NATURAL HISTORY OF THE SEALS.

The inhabitants relate many anecdotes of the sea-dogs already mentioned, and particularly of the Landselur. They say that these animals are very observant; and when they perceive any new object on the land, they approach towards it: which has suggested to the inhabitants the idea of catching them in two ways. They spread nets in the streights and bays through which the seals pass; and then on a dark evening they make a fire on the coast with shavings, horn, and other combustible substances, that exhale a strong smell: the seal, attracted by the scent, swims towards the fire, and is taken in the nets. Sometimes these animals are met with at a considerable distance up the country, being attracted in a dark night by the common light in a house. They are easily tamed: and the people put them, when young, into ponds, and feed them daily; by which they become as tractable as a common dog, run about the yard, and follow the master of the house or any one else who may call them by their name. In some years the seal is almost starved; when, for instance, the winter is severe, fish and insects are scarce, and the sea-weed by which they are nourished is carried off by the ice and breakers: they are then found so lean and weak, that it is impossible for them to escape, and they are easily taken; their fat is consequently wasted, and nothing is found in their stomachs but a few marine plants and stones.

SUPERSTITIOUS IDEAS OF THE PEOPLE CONCERNING THIS ANIMAL.

It is singular that the lower order of people in Iceland have a high veneration for the seal, and at the same time an aversion towards that animal. This doubtless arises from the unfounded idea, that it bears a greater resemblance to man than any other creature. The Icelanders pretend that it has a wonderful instinct; and some extravagant fables they relate of it. The seal certainly resembles a dog more than a man, and this has doubtless induced modern naturalists to give it the name of the sea-dog. We are convinced of this resemblance from the dissection of a couple of seals of the first and best-known spe-

cies: but it certainly deserves to be ranked among the most sagacious of animals. The aversion which some Icelanders have for this animal, is in some degree innate; for nothing can induce them to eat its flesh, though prepared in the best possible manner, and even disguised so that they could not distinguish it: this aversion may perhaps arise from a knowledge that the seal is very fond of human flesh; and that it always follow boats and ships, to feast on the corpses of those who may be drowned or fall overboard. Those seals that have the most hideous aspect, are very dangerous when enraged: they fight together, making the most horrid bellowings; and when they attack a man, it is seldom that he can get rid of them without losing his life. The bite of a mad dog is not more severe: they rise up against a man with impetuosity, attack him first with their claws, and bite him wherever they can. They preserve their ferocity even when they take to flight, and throw stones at their pursuers with their hind feet. When they perceive a man, and the latter does not succeed in giving them a blow on the head, they endeavour to seize his stick in their mouths, in order to force it from his hand; and if he unluckily allow them time to rear on their hind legs, they catch him by the breast, and hold him with such force, that it is impossible for him to get free without assistance.

It is well known, that in ancient times the flesh of the seal was in high repute as an article of food, and that it is still so in many parts; much, however, depends on the choice of the animal. The flesh of the old seal is black; and that of the Landselur, when young, is allowed to possess the best flavour. On killing the animal, the blood is immediately expressed, and the flesh washed and salted and afterwards smoked a little, when it becomes a relish which is pleasing even to epicures. It should, however, be a year old, to possess its proper flavour. We are surprized how the Greenlanders, who may be said to live on seals, can be so active and clever in all their movements; it is equally astonishing how the Icelanders, who, notwithstanding their aversion, are obliged in years of scarcity to live upon the flesh and fat of this animal, nevertheless enjoy good health, and preserve their spirits and size. All the inconvenience that arises to them is, that they lose in some degree their strength, and are not so fit for hard labour.

OF THE MARMENILL, OR SEA-MAN.

Many centuries have elapsed since authors first wrote about the marmenill. Torfaeus, in his "History of Norway," says that it is met with in Iceland; and bishop Pontoppidan assures us, in his "Natural History of Norway," vol. ii. p. 302, that there are several species of it. M. Stroem, in his "Sundmœs-

chen," p. 287, is very angry with those who will not believe in its existence; and Childrey asserts it as a fact, that some fishermen caught one on the coast of Suffolk in 1187, and that another was taken in Yorkshire in 1535. It is said that two have been caught in the sea near Iceland: one when the island first became inhabited, which is mentioned in the Landnama Saga; and the other in 1733, near Talkknefiord, in the bailiwick of Bardestrand: and it is likewise true, that there was found in the belly of a shark, an animal that resembled a man. All those who saw it did not doubt for an instant that it was the body of a marmenill, and not that of a human being. M. Wernhard Gudmunsen, curate at Ottrerdal, which is situated in the same bailiwick, gave us some very circumstantial details of this; and added, that if we desired it, he would procure certificates from all the persons who had seen it. The following is his account: "The lower part of the animal was entirely eaten; while the upper part, from the epigastric and hypogastric region, was in certain places only half devoured, but in others entirely: the sternum or breast-bone was perfect. This animal appeared to be about the size of a boy eight or nine years old, and its head was formed like that of a man. The anterior surface of the occiput was very protuberant, and the nape of the neck had a considerable indention or sinking. The alæ of the ears were very large, and extended a good way back. It had front teeth, which were long and of a conical form, as were also the larger teeth: the eyes were like those of a codfish. It had on the head long, black, and hard hair, very similar to the *Fucus filiformis*; this hair hung over its shoulders. Its forehead was large, and round at top. The skin above the eye-lids was much wrinkled, scanty, and of a bright olive-colour; which indeed was the tint of the whole body. The chin was rather cleft at bottom; the shoulders were very high, and the neck uncommonly short. The arms were of their natural size, and each hand had a thumb and four fingers covered with flesh. Its breast was formed exactly like that of a man, and there were to be seen something like nipples (*papillæ*); the back was also like that of a man. It had very cartilaginous ribs; and in parts where the skin had been rubbed off, a black and coarse flesh was perceptible, very similar to that of the seal. This animal, after having been exposed about a week on the shore, was again thrown into the sea."

This is the history of the marmenill or sea-man in question. If we reflect on the change which an animal undergoes on remaining some time in the belly of a shark, whose propensity for human flesh is well known (as entire corpses have been found in its body); when we recollect, that in a short time this fish can travel a vast distance, and suddenly convey itself from one shore

to another; and lastly, however little we consider that the imagination represents every thing very different from what it actually is; we are almost induced to believe that this thing was a man. But, on the other hand, if the description be exact, it will be observed, that neither the hair, teeth, nor fingers, resembled those of the human species. It must also be remarked, that the inhabitants of Iceland always scrupulously collect and decently bury the corpses or limbs which may be either thrown ashore by the tide, or found in whales and other large fish; and hence, those who saw the animal in question would have made much hesitation in leaving it on the shore for a week, and afterwards throwing it into the sea, unless they had been convinced it was not the corpse of a human being.

FARTHER PARTICULARS OF THE WHALE.

Whales formerly frequented the western coast of Iceland in great numbers; but from the seventeenth to the eighteenth century, the Spanish and French fishers pursued them so eagerly, that they are partly destroyed, and the rest have emigrated towards the North. Those whales which afford a good food, viz. such as have pieces of horn instead of teeth, and those with the *venter plicatus* or plaited belly, are now tolerably well known; because the fishers do not care for these species. With respect to the whales with teeth, or those of prey, it is certain that there are many species in the northern seas, which are still unknown to foreign naturalists, because they are not caught by the whale-fishers; and because, even if these wished to take them, they could not succeed, on account of their extreme agility. The Icelanders, however, are very elaborate in their description of these fish; but all their accounts are so confused and vague that they cannot be relied on.

Among the species well known to the inhabitants, and most of which have been described or mentioned by naturalists, is the *Balæna dorso impenni* of the moderns, which is more commonly known by the name of *Balæna vulgaris et Grænlandica;* but this is now seldom found, except on the coast of Greenland. They eat its flesh, which is very similar to beef, and when young is particularly white and delicate. The next is the *Balæna tubere pinniformi;* or, as other writers call it, *Balæna pinna adiposa in extremo dorso:* this species is now very rare in Iceland. The kind first mentioned is upwards of two hundred English feet in length, and the latter from one hundred and forty to one hundred and seventy.

Of the whale without teeth, or the *Balæna ventre plicato,* there are several species known to the Icelanders; who eat their flesh, which is intermixed with fat, and has a very delicate taste:

but the Greenland fishermen do not search after them, because they contain less fat, and have none at all in the belly. To this class also belong the *Balæna maxima ventre plicato* of naturalists, and the *Musculus* of Linnæus; which are driven to the coast of Iceland from the sea, when the intrepid mariners of the western quarter attack them in the gulphs at a great personal risk. The other kinds are *Balæna media, ventre plicato, pinna brevi acuta in medio dorso; Balæna minima, rostro longissimo et acutissimo; Delphinus, (minimus), ventre protracto;* and *Delphinus (maximus) pinna in medio dorso majori acuminata.*

There is a species of whale at which the Icelanders are much alarmed on its approaching their coast: they call it the *Illhvele*, or ill-disposed whale; and assert that this species is so voracious, that it takes whole boats with their crews into its mouth, destroys the vessels, and swallows the men alive. These whales are said to be so greedy after human flesh, that when they have caught a man in any particular spot, they will wait there a whole year in the hope of devouring another. Hence the fishermen take great precaution to avoid those parts in which they recognise this species, and do not return to them. The greater number of those met with in the open sea, belong to that just described; and the ancient laws of Iceland, particularly the ecclesiastical laws, forbid the eating of them: the species appears to be the *Unicornu marinum.* This fish is seldom seen near Iceland, but its valuable horn is often found on the coast. The "Speculum Regale," p. 130, asserts, that it avoids man.

CURIOUS ANECDOTES OF BIRDS.

Our travellers paid very minute attention to the different species of birds found in this part of Iceland: because the gulphs and creeks abounded in a variety of water-fowl; the hunting of which, as has been already stated, forms a principal branch of the employment of the inhabitants. Among the species most numerous are the tribe of geese, ducks, and pelicans; all of which have been previously described. The mountains are inhabited by various species of the *Alea;* and the Icelanders, in their endeavours to catch them, often forfeit their lives. Sometimes they go in companies of two or three together, and assist each other in climbing to the summits of the mountains, whence they frequently fall and are dashed to pieces; while others proceed along he base of a mountain which is washed by the sea, till they are overtaken by the tide. It is inconceivable to a stranger how these men can find the way back: indeed they often take the precaution of travelling by the aid of a line from thirty to forty fathoms and upwards in length. When two go together, and gain a mountainous height, one holds the line at the top, while the other

searches below. Another method is to let themselves down by a strong line, made with from four to seven thongs of ox-hide; which not only supports the weight of a man, but likewise of all the birds he can take: and five or six men remain at top to lower or draw him up.

We had some difficulty to believe the account of Debes, p. 138, relative to the removal of the young diving-fowl from their nests; for, according to him, the old hen carries them on her back: but as we had never seen any thing of the kind, we took particular pains to inform ourselves of the fact. In the first place, most of these birds fly too heavily, and their wings are too short, to carry their young; which are very fat, and nearly of their own size. The following particulars, however, may be relied on:— As soon as the young has moulted, or changed its first down, the old one ceases to bring it food; but nevertheless continues to visit the nest, and exercise its wings before it, to induce the young to fly. At length the latter, perceiving the old bird to dart with vigour in the air, and impelled by hunger, approaches nearer and nearer to the extremity of the precipices: and here we are obliged to admire the infinite wisdom of nature, which has given the old birds an instinct that informs them their young have not sufficient strength, agility of limbs, nor size of wings, to enable them to fly through the air; hence they carefully watch the moment when the young bird first attempts to fly. The old hen and cock then drop below it, and extend their wings in such a manner that the extremities nearly touch each other: the young bird does its best, but falls backwards and forwards on account of the shortness of its wings. As soon as it is in a train for flight, the old ones cut through the air, scarcely moving their expanded wings, and direct their course obliquely towards the ground: during which time they let the young bird support its neck upon their united wings; and their bodies being at a sufficient distance, it has room to move its own. It is curious to see this family arrive in the water, which is then covered with birds of the same species: for they all endeavour to prevent the novice from falling in; and, receiving it with great noise, give it a place among them, and accustom it to swim. The duration of the life of these birds is unknown, as is likewise the age at which they begin to propagate. When the old birds descend to the plains for the first time in spring, they are always accompanied by their young; which the people endeavour to catch, because they are very fat and delicate.

There is a very high mountain in this district, which is much frequented by the birds in question; and has the following remarkable peculiarity, as can be testified by all the inhabitants of the neighbourhood: When they approach it in a boat, in search of birds, or

for other purposes, so near as to be immediately below it (for it is almost perpendicular, with fragments projecting in many parts) they are obliged to be cautious not to speak loud or make any noise; for this always causes the fall of lumps of stone of different sizes, which the simple people suppose are thrown at them by evil spirits: it is certain, however, that this effect is produced by the sudden motion of the air; as the mountain produces so strong an echo, that the fall of a small stone makes as loud a report as the discharge of a cannon. When it happens that a man or sheep falls from the mountain, it is asserted that the belly bursts open and the intestines come out during the descent; but what is still more surprising is, that when a horse falls, its iron shoes come off before it reaches the ground, and the crooked nails in them are found to be straight. The young birds also fall from this mountain in considerable numbers, and the people of the country come in boats at low water to collect them; but as the tide is here very violent, they sometimes cannot reach the spot till after intervals of several days, when on their arrival they find the dead birds lying in heaps in a state of putrefaction. They then carry off for eating those which have last fallen, and strip the rest of their feathers.

The other species of birds, of which our travellers noticed great numbers in this part of the country, were *Larus collo et pectore albis, supra bruno et albo variegatus; Procellaria* (a kind of storm-bird, according to Linnæus); *Larus albus (maximus), dorso et alis superius nigris; Larus albus medius et vulgaris auctorum; Larus albus, apicibus pennarum albis; Sterna fusco-alba, rectricibus mediis longissimis nigris; Sterna alba, capite supra nigro, &c. Linn.; Tetrao (versicolor) rectricibus albis intermediis nigris,* or *Lagopus auctorum; Turdus minor; Haematopus Linnæi;* and *Pica marina Bartholini.* Among the birds of passage they particularly mention the following, with which the Icelanders were well acquainted: *Numenius (major) rostro arcuato, maculis fuscis rhomboidalibus, &c.; Tringa cinereo-fusca, macula in dorso violacea; Charadrius nigro et luteo variegatus, pectore nigro; Charadrius nigro lutescente variegatus pectore macula nigra, &c.; Charadrius (minimus) cinereo et fusco variegatus, &c.; Tetrao (versicolor) rectricibus albis, intermediis nigris; Lagapus auctorum; Turdus, alis subtus ferrugineis, linea supra oculos albicante; Tringilla remigibus albis, primaribus extorsum nigris, rectricibus nigris, &c.; Motacilla pectore nigro; Motacilla dorso cinereo-cærulescente, fronte alba, &c.; Motacilla fusca, cauda surgente; Hirundo nigra, gula albicante;* and *Passer colore bruneo, fronte ferruginea.*

INSECTS.

There has hitherto been but little information obtained of the insects that exist in northern countries; and it has been even asserted that few are to be found in Norway, and in Iceland none at all, in consequence of the cold which prevails there. Horrebow and Linnæus have, however, proved the contrary: and in Iceland the people are acquainted with several. When our travellers passed through the island, being on horseback, and the season being intemperate, they had but little opportunity of attending to this branch of natural history; but when M. Olafsen was in Iceland in the year 1760, he made a collection, and in one small valley found upwards of two hundred species. He afterwards classed and arranged them; but he justly observes, that, "though insects excite our curiosity and admiration by the minuteness of their conformation, the distinct and singular organization of their parts, their metamorphoses, economy, &c.; yet such details, however interesting to the philosopher, are neither useful nor agreeable to readers in general." In the present work the authors consequently confine themselves to such as are most remarkable for their useful or injurious qualities. They divide them into the six classes of Coleopterous, Hemipterous, Lepidopterous, Hymenopterous, Dipterous, and Apterous. In their descriptions they incorporate the remarks and opinions of the Icelanders on the different species; but as these contain nothing interesting, we shall, for the information of the scientific reader, merely insert their names and characteristics. They are the *Dermestes tomentosus ovatus, aurato nebulosus, or Hæmisphæria Hillii; Curculio abdomine ovato niger, coleoptris striato granutatis; Thaphylinus pubescens niger, or Maxillosus Linnæi; Dytiscus nigro-bruneus extremo abdominis albido*; *Scarabæus (vulgaris niger) Scarabæus thoraci inermi negro elytris rubris or Scarabæus fimetarius Linnæi; Phalæna (maxima) colore obscure sericeo pallescente, &c.; Phalæna tota aurea, punctulis nigris conspersa; Tenthredo aculeo crasso; Ichneumon niger; Apis hirsuta nigra,* the *Apis serrestris Linnæi,* and *Bombylius auctorum. Tipula (maxima) alis hyalinis dilute fusca, &c.; Tipula lutea alis albis, in sedendo orectis; Tipula nigra subvirescens, alis hyalinis non punctatis; Tipula nigra subhirta, alis hyalinis pedibus ferrugineis; Musca (variegata) thorace nigro, nitente abdomine virescenti, &c.; Musca hirsuta lutea, puncto alarum fusco; Musca gibba, capite albo, luteo et viride variegato, corpore aureo; Musca aurata, thorace nigro, abdomine cæruleo-viridi Linnæi; Hippobosca ovina, alis nullis; Pediculus capite et thorace rubris, abdomine cinereo-albido; Pediculus (alcæ arcticæ) e cinereo cærulescens; Pediculus capite fusco,*

abdomine glauco; *Podura tota argenteo-aurata, lanugine suprà cœrulea, &c.*; *Podura obscure cœrulea, antennis crassis, &c.*; *Acarus albus corpore spinoso*; *Acarus petrarum ruber*; *Aniscus fuscus, crusta carinata macula in thorace alba*; and several varieties of the *Aniscus niger*.

EXTRAORDINARY ROCKS.

In this part of the country there are a number of rocks, or large masses of stone of a spherical form, which are heavy, compact, and frequently ignescent: they may be seen in all the mountains of the western quarter, and their spherical surface appears as if rising out of the summits of the mountains. Some of them are two, four, and even six fathoms in diameter. Nothing is more singular than this spectacle, since it cannot be conceived how these rocks have attained their situation. They have every appearance of having been moved from some high spot; though there are no mountains near them more elevated than those on which they stand, while no inundation, however considerable, could have had the power to move them: so that we can only suppose that they were always in the same situation, and that the earth which once covered them has been carried off by water. It is, nevertheless, possible that a great overflowing of the sea, together with the large quantities of floating ice conveyed from Greenland, may have thrown the masses of stone to the height at which they are seen; since it is known that the force of such causes has carried off small peninsulas, rocks, and isles.

POPULATION OF GREENLAND.

The Landnama-Saga and other ancient histories contain an account of the first establishments formed on this coast, which took place at a very early period, and the isles soon became fully inhabited; but their population was considerably diminished by the removal of a colony to Greenland, though historians erroneously assert that that country was originally peopled by the Norwegians. It is nevertheless true, that *Eric the Red* was a Norwegian, born at Jœderen: but he did not go thence directly to Greenland; having previously come with his father to Iceland, where he passed a great part of his life, and he was still young when his father established himself on the coast of Cape Nord. Before this time Greenland was discovered by a person named Gunbiorn Ulfsen, in the same voyage during which he found the rock called *Gunbiorn-Skiær*. His account gave Eric the Red the idea of proceeding thither, on his being obliged to quit the former country for a homicide which he had committed. At this period, which was about the year 982, Iceland had been inhabited upwards of a century. Greenland was not occupied

till three years afterwards; because in that interval Eric returned to Iceland, and boasted much of the country he had visited. The narrative of Eric produced such an effect on the inhabitants of Westfiord and Borgarfiord, that in the year 986 they embarked in twenty-five vessels for Greenland: but being unfortunately overtaken by a storm, only fourteen of the ships reached their destination; the others were partly lost, though some put back to Iceland. The new settlers increased rapidly, so that in a short period there were two hundred and eighty farms in the western and eastern parts of Greenland. On comparing this population however with that of ancient Iceland, it is found not to equal one-third of the smallest canton in the latter country, according to the survey of bishop Gitzur.

NORTHERN QUARTER.

Our travellers, on entering the districts of Hunevand, Hegrenœssvadle, and Thingoe, inform their readers, that as the system of investigation they pursue renders repetition so frequent as to become tedious, in consequence of the same objects recurring in every quarter of the country, they intend in future to be very brief in their descriptions of the remainder of their journey, and to mention only such circumstances as are peculiar to each district.

It appears that on their first arrival in Iceland they began their journey from the southward, quitting the chain of mountains that extends across the isle from east to west, and intended to go by the road which leads to Skagefiorden, about twenty Danish leagues in length*: but when they reached the midst of the mountains, a violent storm of wind and rain came on; which continued with such fury that they lost their way, and wandered for three days about the mountains, exposed to the inclemency of the atmosphere, without food either for themselves or their horses. They were obliged, at the risk of their lives, to cross several large rivers that proceed from the glaciers; and through which they were forced to wade and lead their horses, which had lost their shoes, and thus wounded their feet. At last, after encountering inexpressible difficulties, they had the good fortune to fall in with a road that led them to the canton called Oefiord; whence, after remaining a few days, they resumed their journey across the district of Thingoe, northwards to Tiorness, and the volcanic and sulphureous mountains in the vicinity of lake Myvatn. Some time afterwards they undertook another tour to the north of Iceland: by going first through the district of Dale, as far as the gulf of Rutefiord, which separates the divisions, and the north

* Fifteen of these leagues make one degree of the equator. —*Edit.*

shore of which forms a part of the northern quarter. Their observations on this quarter are the result of the different journies specified.

The northern quarter is generally reckoned as one-third of Iceland: but this it cannot be in point of extent; for if in the western quarter we comprise the inhabited mountains, this alone would be almost as considerable in size as one-third of the island, while the eastern quarter would be rather larger. In respect to culture, it is certain that the northern part is of far greater importance than any of the rest, as well as the next in point of population to the southern; nevertheless, the number of inhabitants in the northern portion does not form one-third of the population of Iceland. The site of this quarter is very fine; and agreeably intersected by gulphs, vallies, promontories, and little defiles that run between the mountains: and there are several isles along the coast, some of which are very fertile, but others do not afford herbage sufficient for the cattle they contain. There is an isle called Flatoe, which lies a little to the eastward of the point of Giogre, and is very important as a fishery. In the year 1755 it contained four farms, or habitations of peasantry, all of which were destroyed by an earthquake. The fish at this and three other isles near the port of Husevig are so abundant, that the inhabitants make an annual trade of them: they live, however, themselves principally upon sea-fowl, which are very numerous; particularly the *Larus albus extremitatibus alarum nigris*, and the large Peterell. This latter bird contains in its intestines so great a quantity of oil, that it ejects it, when irritated, from its body. Hence, when the inhabitants catch it, they take the precaution of tying its two extremities with a packthread, to prevent the oil coming out. They prepare this bird for their winter food, by half-salting and drying it: they eat its fat with cod-fish in lieu of butter; while its feathers, particularly those that come from the belly, are so oily that they serve for kindling a fire, and thus occasion a disgusting stench.

DISRUPTION OF MOUNTAINS.

These events often cause very terrible misfortunes in the cantons to the east of the gulf of Skagefiorden, and in that of Norderaadal; but the inhabitants of Vatsdal in particular have suffered much from those shocking disasters, the last of which occurred in 1720. A dreadful fall took place in 1545, which annihilated the farm of Skidestad, and buried thirteen persons: the torrents of water which were precipitated from the fractured mountain carried off a great portion of the meadow ground belonging to the farm, and conveyed it a considerable distance to the eastward. It is doubtless impossible to give directions for guard-

ing against such fatal accidents; nevertheless we shall communicate our opinion, which may be useful with respect to the ordinary disruptions that occur almost every year. The inhabitants, who pretend that there can be no remedy for these misfortunes, have neglected the precautions that were taken by their ancestors; such as high inclosures, or stone walls, raised to stop the progress of the fallen masses. These walls were composed of two parts, which met and formed an acute angle opposite to the crevice of the mountain, where it was supposed the fall would take place: this angle was very thick, and constructed of the largest stones that could be procured; the walls were continued on the two sides of the angle, and formed two arcs of a circle, the extremities of which ascended obliquely to the foot of the mountain. The angle had a coating of stone within and without; and the two walls which formed it diminished gradually in strength from the point to their end. For a long time these walls were carefully repaired every year; even when the fall had been so great as to cover a large portion of the soil, and destroy many houses: and when the fragments that fell were so considerable as to form a hillock at the base of the mountains, they increased the hillock and made it serve as a wall, to secure their habitations from the effects of similar accidents.

REMARKABLE RIVERS, LAKES, &c.

In the northern quarter there are a much greater number of rivers and lakes of fresh water than in the western part, and they all afford abundance of fine salmon and trout. There is a lake in the canton Olafsfiord, in the district of Vadla, which is well worthy of attention from the remarkable circumstance that a variety of sea-fish, and particularly the cod, are naturalized and abound in it. In winter the inhabitants break holes in the ice, through which they pass their lines, and catch these fish by the hook. In the spring it abounds in trout: and the sea-fish taken in it have a most exquisite taste, very different from that of the same species caught in the sea; from which the lake is only separated by a kind of jettee, formed of the mud and surf of the shore, and heaped together by the impetuosity of the waves. The river that descends into the lake has formed a narrow passage over this bank into the sea. The lake is about a Danish league in length: and it is very evident that it has been separated from the sea by the effect of an earthquake, or subterraneous fires; that the same revolution first formed the bank, and enclosed in it the species of sea-fish that it now contains; and that the river which empties itself into it, by gradually depriving the first water of its saline quality, naturalized the fish that it contained, and which afterwards bred in it.

The largest lake in all Iceland is that called Myvatn, and it contains the greatst abundance of trout.

From time immemorial, the Icelanders in the vicinity of this lake have had no other means of obtaining a living than by fishing here for trout. Each peasant has his boat with ten or a dozen lines, that are from ten to thirty fathoms in length: these lines are made by the women, who spin hemp into very fine threads.

HOT AND BOILING SPRINGS.

In the district of Hunavatn there are two hot springs. We visited the first, which is called Reykehver; and on immersing Fahrenheit's thermometer in it, we found that in three minutes the spirit of wine had attained the 204th degree. Our people having brought from a neighbouring river a lump of fresh salmon, we suspended it in the water by means of a stick placed across the orifice of the spring; and in eight minutes we found it perfectly dressed and excellent for eating: it was even more tender than if it had been boiled over a fire. The two brass hydrometers which the Royal Society had sent us, sunk in an instant to the bottom. The other spring forms a bath which the inhabitants constantly use; and they assert, that when the heat of the water increases in this bath, it is a certain sign that the weather, though clear and serene, is about a change, and that rain will speedily fall. This observation is applicable to all the boiling springs in Iceland.

OF THE HVEREVALLE, OR BELLOWING HILL.

This hill, so famous throughout Iceland, rises from the top of the mountain of Kiolfield, and to the westward of the road. We had often heard the most wonderful though very unsatisfactory accounts of it; since none but the shepherds and herbalists had approached near it, on account of the quantity of lava and numerous marshes, which rendered all access to it difficult and dangerous. We were informed that the most dreadful roarings proceeded from the hill and could be heard at a great distance; which, together with many other particulars not less surprising, induced us to visit it. On the 18th of September, as we passed in view of it, we discovered at a distance a thick smoke that proceeded from it, and rose to a great height in the air. When we came within the distance of a quarter of a league, we saw distinctly that the smoke was exhaled from three different places; and heard from afar a noise resembling the roaring of a lion, but accompanied with a whistling that sounded in a manner the most piercing to our ears. Our horses were scared, erected their ears, and it was with considerable difficulty we could make them advance. At last we were even obliged to dismount and leave them at some distance, and perform the rest of our journey on foot.

The first object that arrested our attention was a white, round, little hill, from which the smoke issued with impetuosity by three narrow winding apertures that occasioned the whistling. These openings were about two inches in diameter. The borders were of a red colour, mixed with white and green. We endeavoured to sound them, but were unable on account of their sinuosity. The little stones which we threw into them were instantly forced out, and the flat stones with which we attempted to cover the mouths of the apertures were immediately driven away by the pressure of the smoke. While we stood near them it was impossible for us to hear ourselves, even when calling out as loudly as we could. In other respects Hverevalle is a large valley full of herbage, and might be inhabited were it not for its height and its position. On the north of the glacier of Bald Jokul, we saw several swans swimming near the hill, and in a rivulet that flows at no great distance we observed some trout. The ground here is never frozen in winter; on account of the subterraneous fires, the heat of which we sensibly felt. Near the hill are three large hot springs, where we perceived a great number of petrifactions: the middle one is the most impetuous, as it propels the water to the height of seven feet. But an extraordinary circumstance peculiar to all these springs, and which no others in Iceland possess, is that a brilliant, fine, and hard crust is formed at its surface, which resembles porcelain, and at a short distance produces an appearance similar to a coating of ice. In this vicinity we observe the ordinary variations of the *petrefactis tophaceis* and the *bolis thermarum,* in their different colours of white, grey, red, and yellow. In the part at which the lava begins to run, there is a very deep chasm in the ground, from which a kind of smoke issues that has tinged the rocks black and red, and covered their sides with particles of thermal boles. If the ancient Greek and Latin poets had been acquainted with these places, they would certainly have described them as the residence of Eolus and Vulcan; for the Hverevalle is, beyond contradiction, among the most admirable and extraordinary wonders of nature to be met with in Iceland.

There may also be remarked here the remains of a large building, which is supposed to have been inhabited by banditti; but this is not very probable, as the place is accessible on all sides. We found in this vicinity a vast number of square lava-pebbles, of which we formed a pyramid ten feet in height at a few paces from the Bellowing Hill; and on this occasion we observed a singular instance of the penetrating force of sound, as we found that our pyramid re-echoed the roaring of the hill.

In the district of Thingoe is a spring called the Oxehver, or ox-spring; which is said to derive its name from the circumstance

of an ox having fallen into the crater, and being afterwards expelled from another at some distance. But the most probable origin of the name is, that the noise resembles the bellowing of an ox. The Oxehver propels the water to the height of eight feet for about a minute, or till that in the bason is reduced about a foot and a half: it then ceases for two or three minutes, at which time the water in the bason has regained its level; a harsh noise is then heard in the earth, similar to that from the discharge of several muskets, on which the water begins to issue with impetuosity. At a short distance farther to the north is a small hot spring, which the inhabitants use for bending wood; as the water possesses the singular property of softening and even consuming wood that is left in it a short time, to such a degree that nothing but the filaments remain, and it is difficult to distinguish to what substance these belong. The natural colour disappears; and the wood becomes white, blueish, and somewhat transparent: under this state it much resembles asbestos, and when the filaments are separated they might be taken for fine silk-thread. This singular metamorphosis is the more worthy of attention, because it is on a substance thus prepared that the thermal waters exert their petrifying quality in impregnating the matter of the *particulis tophaceis*.

METEORIC PHENOMENA.

The northern quarter of Iceland often affords a spectacle of igneous meteors, but particularly lightning and other calorific phenomena, which originate from the volcanoes and vast glaciers in the middle of the island. The atmosphere is sometimes red and loaded with flame; while at others there may be seen ignited globes and trains of fire like comets, which dart backwards and forwards to a great extent.—Several of the inhabitants of this quarter, and particularly of the district of Hunavatn, perceived at the end of September 1755 a phenomenon of this kind. An earthquake, which was felt in the whole of the northern district, preceded the appearance of the meteor; and was considered as the indication of the eruption of mount Katlegiaa, which actually took place about the middle of October. The earthquake began by five or six shocks at eight o'clock in the morning, and towards nine several others occurred, which were announced by a hissing in the air: the ground then shook, and at first experienced a number of gentle though considerable motions; but afterwards the concussions were frequent and violent. We happened to be present when this event occurred, and our tent made frequent springs in consequence of the undulating motion of the ground: at the same instant we heard a terrible noise, the shock of which threw us out of our tent; when we saw all the mountains enve-

loped in a thick fog, while the air resounded with the continual fall of vast precipices.

FERTILITY OF THE NORTHERN QUARTER.

We were enabled by experience to confirm the report, that in the northern districts both grass and plants thrive abundantly; a circumstance which is attributed to the prevalence of the north winds. We remarked that the vapours which this wind conveys to the districts near the sea, contribute materially to fertilize the soil. Two principal causes may be assigned for this effect. The first is, that the plants of the northern climates are, as well as the inhabitants, accustomed to cold, and can support it better than heat: hence, when they are transplanted to a milder region, it is necessary not only to procure an appropriate soil, but even snow and ice are necessary to preserve them. Another cause of the vigour of grass and plants in the northern countries is, that their roots can withstand the rigours of winter.

This district produces the same series of plants as are found in the western part. The following species are met with in considerable abundance: *Gentiana, Centaurium (minus); Cochlearia; Achillea (millefolium); Epilobium (alpinum); Arundo (arenaria); Papaver alpinum; Agaricus caulescens, pileo albo horizontali, lamellis & stipite albis; Agaricus caulescens, pileo supra plano subconvexo horizontali, &c.; Agaricus caulescens, pileo subconvexo supra ex albo sanguineo; Viola Martis tricolor; Gallium flore luteo; Pinguicula; Plantago mervia; Ulmaria; Archangelica; Muscus Islandicus Lichen foliaceus minimus ascendens ramosis; Coralloides tenuissimus nigricans; Bistorta (polygonum); Campanula (patula); Rhodiola; Juniperus fruticans;* and *Carduus heterophyllus.*

The various particulars relative to the character of the inhabitants, their manner of living, and the means of their subsistence, are so very similar in their details to what we have already enlarged upon, that no farther observation is necessary. We shall therefore mention a few unconnected circumstances; such as the

SINGULAR METHOD OF CATCHING MOUNTAIN-FOWL.

All the birds taken on the isle of Drangue, as well as their eggs, and the perroquets of Iceland, belong to the bishop. This chase, if it may be so called, is very lucrative: but that pursued by sea within circumference of the island is still more so, and is performed in the following manner. They construct small rafts of plank, about four feet long by two and a half wide, and fix five of them together in such a manner that the distance between each increases progressively from boat to boat. A cable, with a large stone for an anchor, fixes them in the sea. Each raft is

perforated with a number of holes, in which are arranged from a hundred to a hundred and fifty laces of horse-hair; and a bird-call is placed in the middle raft. The inhabitants of the environs, on the arrival of the season, repair to the shore to pursue this kind of hunting. Their boats are large, and contain from six to eight men, while to every five rafts is attached one of these boats. There is, besides, a boat which draws six or eight smaller rafts, for the benefit of the men employed. As soon as they have fixed the rafts, they go to a distance and drop the fishing-lines, which are provided with a certain number of hooks: these are sunk to the bottom by leaden weights, while they are kept perpendicular by wooden floats.

They visit these lines twice a day, and in the interval they fish with common lines. The fish are distributed over the rafts. Each raft is capable of containing about a score of birds at a time; and it is remarkable that the fish suffer themselves to be taken more readily with black horse-hair than with that of any other colour.

The western part of the isle of Drangue contains a spot at which these hunters can land at the base of a rock: but it is impossible to proceed up the island without permission from the people belonging to the bishop, for on every side the rock is extremely steep. In the spring, when the people employed by the bishop arrive, the most hardy and active among them ascends by driving nails from space to space on which he rests his feet, and continues this process till he gains the summit; he then drops a rope with which he is provided, and thus enables the others to mount. On quitting the isle they take out the nails. It will be perceived, that when they gain the top they begin to hunt the birds; but though this manner differs from that of the rafts, yet the latter is of great utility when the sea is calm.

A MONSTER.

In these districts there is a kind of fish which is considered as a monster, perhaps on account of its size; but it will doubtless be discovered by naturalists to belong to the genus of marine worms. The Icelanders may be excused for their notion of it, since it is known that a celebrated nation, remarkable for its scientific men, has taken for an unknown and terrible monster a far less animal, doubtless of the same species. We found in one of the annals of Iceland an account which states that in the year 1639 there was thrown upon the coast of Thingoe a singular creature or monster, the body of which was as long as that of the human species, and was provided with seven tails; each of which was four feet long, and covered with

knobs resembling the pupil of the eye, with eyelids of a golden colour. Independently of the seven tails, another appeared above them, which extended to the length of four or five fathoms. The history relates that this monster had neither bones nor cartilage, and to the sight and touch appeared only like the front part of a woman's stays: no head was distinguishable, unless one or two projections might be called so which were near the seven tails. It is said that many persons of respectability examined this prodigy, and that one of the tails was sent for investigation to the ancient abbey of Thingoe. The above is the description of this fish as accurately as we could procure it.

It at first appeared to us that the examiner was deceived, and had taken the posterior for the anterior part of the animal; while the carbuncled appendages might be not tails, but tentacles or arms; and as mention is made only of seven, it was probable that the eighth hadbeen torn off. Now, however, we think it evident that it was nothing more than a very large cuttle-fish *(Sepia)*; but of what species we cannot determine, since no description has been given either of the form of its stomach or the structure of its mouth, which were probably disfigured and damaged. The description of the carbuncles and the cotyledons is curious; and appears to be very accurate, from the precision with which the colours, &c. are described. An animal of the same species, which was found on the coast of Holland in 1661, excited such a sensation in the country that it was taken for a prodigy. Aldrovandus, Johnston, and others, speak of a fish of the same kind which was found in the Mediterranean, and which grew to four feet: it had ten tentacles like that of Iceland. We saw a drawing of this fish; which, though badly made, enabled us to ascertain its structure.

VAPOUR-BATH.

On arriving near some mines of sulphur, our guides pointed out to us what they called a dry bath, which is a natural grotto that has been rendered more convenient by being fitted up with lava-stones found in its vicinity. Two apertures in the floor of this grotto exhale a very hot and moist vapour, which however is neither unhealthy nor of a disagreeable smell. The inhabitants make use of this bath by sitting on the ground, which is covered with sand. There are many opportunities for constructing similar baths in this neighbourhood.

VOLCANOES, AND MODERN ERUPTIONS.

Near Myvatn there are two or three burning mountains. That called Krabla is celebrated by its terrible eruptions between the years 1724 and 1730. It is formed rather of clay than of rock;

and of late years has become crooked and deformed; but its name, as well as two hideous gulphs or basons which it contains on the south-east side, still render it famous. These gulphs contain stagnant waters, and have received the name of Hell-mouths. Although there were several inhabitants at a short distance, we could not induce any one, even for money, to conduct us to the Krabla: for they all pretended that it was impossible to get at it, particularly on horseback; as their sheep were often lost by falling from the precipices, and sinking into the pits of mud which are concealed from view. Having however received all the information we could procure relative to the road, we set off together and arrived without accident, though we met with many of the reservoirs which were hot and covered with a crust of red earth. We ascended the Krabla till we reached one of the craters in the form of a cauldron, which we distinguished from a distance by the black and thick smoke that it emitted.

All this country we found to resemble the famous *Solfatara* near Pouzzol in the kingdom of Naples, and which the inhabitants take to be purgatory. The last eruption of the Krabla was terrible and impetuous: it vomited flames and matter in a state of fusion, which rolled down in torrents and inundated the neighbouring fields. In the lake, where this matter burned like oil for several days, it killed all the fish, and dried up a great portion of the water. The largest branch of this river of fire ran three leagues from the mountain, and was a league in breadth; while another torrent overran the presbytery of Reykehlid, which was swallowed up without leaving the least trace behind: but the most astonishing circumstance in this accident was, that the church remained untouched, as did the burying-ground attached to it, though the firey torrent passed round and scorched it. The volcanic matter ran slowly, destroying every thing it met with in its passage without undergoing the least change. All the lava is therefore of the same black colour; and no difference is to be perceived in the part where the parish was destroyed, except that the stones are a little redder. These volcanic torrents emitted in the day-time a blue flame like that of burning sulphur, though the smoke that rose from every part prevented it from being often seen. During the night the whole horizon round the lava was inflamed, and the highest regions of the atmosphere were reddened by it. The burning streams propelled globes of fire into the air, the continued redness of which gave notice of the horrible disaster at a very great distance. In the parts where the torrent stopped, as well as in the vallies, the surface of it was soon covered with a crust similar to the scum formed on hot milk: this crust, which might be from one to two

feet in thickness, soon hardened like stone; but when new waves of fire arrived they broke, melted, and carried off the crust, as a thawing stream dislodges and conveys away the ice. In concretion the lava assumed different and very curious figures; as those of flowers, works of sculpture, &c. After the volcano had ceased to vomit fire and formed its incrustation, the bottom of the currents of lava remained a long time in fusion, and continued to run under the crust in such parts as were sloping: in forcing its passage the fiery substance generally broke the condensed crust, and thus occasioned many crevices and caverns internally vitrified, with stalactites suspended on their sides. The most intense fire of these volcanic currents vitrifies, calcines, or reduces to ashes, every thing with which it comes in contact; and when it consumes itself in a rock it leaves nothing but the ashes of the matter in fusion.

OF BLOOD IN THE SEA.

This phenomenon is well known in other countries, but seldom occurs in Iceland. It was perceived in 1712 on the coast of Reykestrand, from the shore to a considerable distance in the sea. The oars of the fishermen were tinged red, as were the rocks below high-water-mark. The historian says, to make use of his own words, "that they were dyed or covered with coagulated blood;" which proves that the writer, as well as the people, conceived it to be that substance in reality. The same phenomenon was observed in 1649 in the western quarter, about two leagues in the sea: on the preceding night the water appeared to be all on fire, and the next day it was red. It must therefore arise from something of a phosphoric nature; but we cannot decide whether this proceeded from marine insects, or some maritime plant.

VARIOUS REMARKABLE CIRCUMSTANCES.

We shall here record a few observations which we conceive to be of interest.

I. The first church for christian worship was that built at Aas, in the canton of Hialtedal near Holun, in the year 985: it was erected by order of bishop Thorvard Spakbodvarson.

II. The small farm called Kalvskind, near Oefiord, is celebrated from having been the residence of Rorek, king of the upper countries of Norway. Having been vanquished and made prisoner by Olaf the Holy, king of Norway, who put out his eyes, he was transported to Iceland; and was no where happy except in the little farm above-mentioned, which was then kept by a poor peasant.

III. Printing was introduced into Iceland by a Swedish priest named John Matthieson, who practised it in the district of Hu-

navatn, where he resided in 1743. His son conveyed his printing-office to Nupefell, where he printed books at the same time when bishop Gudbrand began to print at Holun; and this prelate afterwards added that printing-office to his own.

IV. A human skeleton was dug up in 1748, from an eminence in the presbytery of Ravgenil. During our travels we saw the bones; which were large and strong, and evidently those of a man far beyond the ordinary stature. From several circumstances we had reason to conclude that this skeleton must have been buried nearly eight hundred years.

V. A pestiferous and terrible meteor, like a large cloud, was seen in the last century upon the mountains in a high and narrow path at Siglefiordskard: where, as well by day as by night it moved about in the air; and falling suddenly upon travellers, suffocated them in an instant. This was most destructive about the year 1730, and it was supposed by the people to be the evil spirit. The curate of the district had orders, on performing divine service, to offer up prayers for its removal: an altar of stones was, in consequence, erected near the spot in 1735, and the service celebrated in the presence of a great number of assistants. Since that period nobody has been incommoded by the phenomenon.

EASTERN QUARTER.

This part of Iceland, which in the language of the country is called Ostfirdinga Fiordung, extends from Langenœs in the north to Osterhorn in the south, and from this latter promontory towards the west as far as the river called Stank-Elv-paa-Solheime-Sand. In going over this quarter our travellers pursue their usual series of remarks on the situation and quality of the soil, the coasts, isles, mountains, and roads; with other minutiæ, not generally interesting, if we except the following particulars.

OF THE PRINCIPAL MOUNTAINS.

There are very high mountains in Iceland, but no part of the country contains such enormous ones as this quarter. We travelled to the glaciers which several of them contain, and which eject water and fire. Our journey to the mount named Katlegiaa was occasioned by a wish to see closely the eruption from that volcano which took place in the year in which we travelled.

AWFUL ERUPTION OF KATLEGIAA.

One of the ordinary symptoms of an approaching eruption of volcanoes is an earthquake. The last in this district occurred in 1755, and was probably occasioned by the internal convulsions of the glacier of Myrdal. The same glacier exhibited a simi-

lar dreary spectacle about the year 900; and from that period to the time above-mentioned, the horrible scene has been five times repeated. Nothing, however, indicated the last eruption; except that towards the end of the preceding year two new rivers arose from the glacier, and ran across a part of the canton called the Sands of Myrdal. The people, nevertheless, did not apprehend an eruption, though they had observed an extraordinary melting of the ice of the glacier, which must have been occasioned by the subterraneous fire; because, as soon as the ice is dissolved, the water which drops from it falls into the bowels of the mountain, and meeting with the fire puts it in agitation. Hence arises the earthquake which is felt at a distance: because the fire labours to open itself a passage, particularly near the volcanoes that are extinct; and there may often be perceived vent-holes from which the fire exudes, very far from the place of eruption.

With respect to the eruption we are about to describe, it began about ten in the morning on the 17th October; when sudden and irregular shocks were felt throughout the whole canton of Myrdal, which did great damage to the houses. Soon afterwards the fire burst out with great violence, totally melting all the ice that remained: and afterwards a river darted from the Katlegiaa; and, spreading itself into three branches, inundated the whole extent of lava called Myrdal Sands. This torrent carried with it, as far as the sea, a quantity of enormous pieces of ice like small hills, which crashed together in their course with a terrific noise, and which had torn off with them fragments of rocks as large as mountains. The torrent of water was filled besides with smaller lumps of ice and black pumice-stone; and it was in general thick and muddy, impregnated with sulphureous and cineritious argilla. The continual shocks of the earthquake absorbed the attention of the inhabitants: when suddenly a terrible noise, like the bursting of a thunder-cloud, issued from the Katlegiaa, which was followed by a propulsion of fire and water alternately, accompanied by a dreadful report; at the same time an internal disruption occurred with such violence, that the inhabitants thought the moment was arrived for the total destruction of Iceland. The eruption took place at three contiguous apertures; and immediately after a deluge of water rushed forth, carrying off to the sea prodigious masses of ice and rocks: it was preceded by a thick cloud of black smoke, and followed by a hail of gravel and pumice-stone. During these horrible scenes the earthquake continued with a singular subterranean noise; and from time to time the volcano projected to a considerable height vast globes of fire of a dazzling brightness, which burst in the air and were seen at a great distance. After the first

paroxysm, and the shower of stone and gravel, a natural but very extraordinary hail succeeded; each hail-stone containing a particle of gravel or ashes, with which the air was filled at the moment of congelation. The volcano thus continued its ravages for the first day; and at night it presented a spectacle similar to artificial fire-works: the air was filled with flames and sparks produced by the globes of fire which the crater continued to dart forth like lightning; which rose to a distance, then split into thousands of particles, and spread a sublime effulgence in every direction. These globes of fire were projected into the distant cantons. An ignited column of various colours next rose from the crater; and a tremendous report, similar to the repeated firing of artillery, was heard in the bowels of the mountain, independantly of the noise already mentioned. The people, among whom were ourselves, were much inconvenienced by an insupportable sulphureous smell; and a fine ash-like dust, which we inspired by the nostrils, and which soon affected our lungs. Both heaven and earth now appeared in flames: the burning matter fell upon the affrighted spectators, who were fully of opinion that the world was at an end.

On the following day, the 18th, the weather was calm but rainy, and the volcano was obscured from the sight by a fog that covered the whole canton. The same detonation, earthquake, and subterraneous noises, were, however, repeated, accompanied with frightful hissing. At night the horrid spectacle of the preceding evening was resumed, and globes of fire were incessantly propelled.—On the 19th the weather was serene, and the air was clear throughout the canton of Myrdal: the wind was north-west. The column of smoke which rose from the apertures of the volcano appeared black by day, and full of balloons and sparks of fire, which at night illumined this whole canton as before; but it is very remarkable, that the districts to the eastward were enveloped in total darkness, as well by night as day. All the cantons in the eastern quarter were covered with black sand and ashes: and the internal detonations, resembling the reports of cannon, were heard as far as the districts of Goldbringue and Kiosar, which are between twenty-five and thirty leagues distant from the volcano; while on the same day the ashes fell like rain in the isles of Feroe, so as to render them totally black*. The next day the wind blew from the same point, and the volcano continued its ravages. At this period, among the globes of fire that were propelled, we observed two of very great bulk,

* These isles are situated in the North Sea, about the longitude of seven west from London. They are one hundred leagues (of twenty to a degree) E. S. E. from Katlegiaa. *Edit.*

which burst with such a horrible report that we never heard any thing like it.

On the 21st of October the wind changed to the north-east; the darkness spread to the canton of Myrdal, and the atmosphere was covered with a whirlwind of ashes. The column of fire continued to rise till the 28th; when the wind changed to the north-east, and the darkness prevailed, accompanied by a terrible fall of ashes, which blackened the snow in the isle of Videy, in the district of Goldbringue. In the vicinity of the mountain the pumice and other stone and gravel had fallen to the depth of three feet. In short, till the 17th of November the eruption, earthquakes, and detonations, continued with little diminution in point of violence.

In the following year, between January and September, this mountain made five eruptions; the last of which was accompanied with a terrible fall of stones and ashes, so as to throw the inhabitants again into the utmost consternation.

The disastrous effects of the eruption of Katlegiaa were—

1. The devastation of the surrounding meadows by torrents of water; and particularly also by the showers of sand, ashes, and stones. By this means nearly fifty farms were destroyed, and the owners rendered houseless.

2. The mountainous country beneath the volcano, as well as the sea-shore, afforded incredible proofs of the violence of the eruption; for there might be seen along the whole coast of the mountainous chain of Myrdal, several large rocks in the space of two leagues, which had been detached from the glacier by torrents of water. Three chains of rock, ice, and pumice-stone, extended in a parallel direction along the Sands of Myrdal, and ran into the sea at the distance of three leagues from the coast. These rocks still project above the sea, in places where the fishermen formerly found forty fathoms of water.

3. The eruption alluded to reduced the inhabitants of the vicinity to misery; and it is even a miracle that many of them were not destroyed, though it was ascertained that only two persons lost their lives by this fatal occurrence. The roads and fields about Katlegiaa were filled with travellers on the day of the eruption, and the torrents of water thrown out by the crater carried off numbers of cattle. The men who were surprised by this sudden fall of water, saved themselves on the mountain of Hafursoe; which is insulated, and probably had been surrounded several times with the aqueous fluid. Others had already passed the fatal plain; and many saved themselves upon the heights, leading up their horses: but these eminences soon became isles by the inundation from the volcano; and the unfortunate people were thereby exposed for seven days to starv-

ing, cold, and showers of stones, with no prospect around them but that of certain destruction. At length the masses of ice being consolidated, they drew after them their emaciated horses, which were so reduced as to be unable to walk; and gained, when they were themselves in the last stage of exhaustion, the parish of Hofdebreck, in the canton of Myrdal. On the 7th November, when the inundation had ceased, these men, to the number of eighteen, endeavoured to pass over the plain; but the heaps of ice rendered the passage impossible, and and they at length found the means of reaching the sea-shore.

The strong sulphureous exhalations, besides subjecting the inhabitants to the danger of suffocation, also deprived them of the sense of smelling: the eyes became red, the eye-lids swoln, and the gums ulcerated. The cattle which were not carried off by the inundation, did not escape the disaster: for some of them went mad from alarm at the fire and earthquakes, and ran headlong into the abysses among the rocks; while those which remained were starved, because the pastures were covered with sand and ashes, so that the animals, by searching for grass, excoriated their mouths and teeth. To increase these unfortunate circumstances, the winter provisions which the inhabitants had collected, were spoiled by the fine cineritious dust, which penetrated every crevice of the houses; and all the portable water was corrupted by the infected air and flying ashes.

4. The volcano threw out, during the impetuosity of the eruption, a meteor similar to a strong flash of lightning, the effects of which were both astonishing and dreadful. Eleven horses were killed by it in the vicinity of the mountain, three of which were in a stable, and were found dead by the side of each other. The two people abovementioned lost their lives by this meteor in a remarkable manner: The one, a respectable peasant, on coming out of his house, was struck by it, and fell dead instantly: at first, no mark or wound was perceived, nor were his clothes scorched; but, on being undressed, it was found that the skin and flesh on the right side were burnt so as to expose the bones, as were the shirt and neckcloth, which were probably of good linen, though his outward clothing, which was of woollen, did not seem to be injured. The other victim of this phenomenon was a servant, who used to go out with the peasant to milk the cows: she was struck at the same time, but did not die immediately. On changing her clothes it was found that she had been burnt on the right side; but the burn, which was penetrating, glutinous, and very different from an ordinary stroke of lightning, continued to consume her, so that whenever the clothes in which she had been dressed were taken off, they were found to be damaged by the caloric. At length her body

became swollen, and suppuration took place: the fire extended to her intestines; and this unfortunate girl, after lingering for some days, expired in the most shocking agony. Several persons observed that this fire perforated in various parts the hard and compact rocks which it met with in its passage; making round holes which were smaller on the side from which it issued, than on that where it entered.

GLACIER OF KATLEGIAA, &c.

Our travellers made a journey to the summit of this glacier, accompanied by a guide; and reached it, after encountering many difficulties exactly similar to those they experienced on travelling to other eminences. When they arrived within a league of the glacier, they were surrounded by a heavy fall of snow, and the winds became so violent that they could scarcely stand. A fog covered the mountain on which they stood, as well as the summit of Katlegiaa; and they would not venture to pass the night at such an elevation, lest the cold should be too severe. But the greatest danger they incurred was, their proximity to the Katlegiaa itself: which was then in a state of fermentation, and, as they were informed by the guides, had been vomiting fire for two days before; while from the direction of the wind at the time of their journey, they were exposed to any shower of stones and sand that might occur. They therefore returned to their tent by eight o'clock in the evening. On the following day, say our travellers, at six in the evening, a loud report similar to a clap of thunder, was heard from Katlegiaa. Our guide, who was born and brought up in the vicinity of the mountain, told us, that the masses of ice had given way in the parts were the noise was heard. In the evening we saw towards the west a globe of fire, at no very great height above the horizon: it was about the size of a full moon, and had a tail like a comet; while above it, another stream of light appeared in a zigzag form like lightning. In a short time both these meteors sunk, and disappeared in the clouds that surrounded the glaciers of Myrdal.

On the 30th August we pursued our journey over various summits till we reached the top of the glacier; where we had a fine field for contemplation on the nature and effects of the lava, both of which have been already described. The result of our observations on this and the neighbouring glaciers, may be comprised in a short compass. The degree of heat and cold is very different in these cantons; but no one has hitherto thought of making observations on the thermometer, which might nevertheless be highly interesting, particularly in the neighbourhood of Oræfe, which is contiguous to the glaciers. It would be very

astonishing if the cold were not found much more severe in this part than elsewhere.

The masses of ice which come from Greenland to this coast, as well as to that of the north, cause here the same revolutions as occur in the more northern atmosphere: they chill the air on their arrival to such a degree, that in summer snow falls in abundance; while the frost is so severe that it destroys the grass, and sometimes even the cattle. In the years 1755 and 6, we were witnesses to a similar occurrence which destroyed all the productions of the soil. It appears that these masses of ice, came in ancient times to the eastern coast. The annals relate, that in 1320 they obstructed the passage to the north and east shores, and occasioned a famine in the following year throughout Iceland.

The atmospheric phenomena, earthquakes, &c. are so frequent in this part of Iceland, that the inhabitants seldom regard them, and still less speak of them, as new or extraordinary occurrences. The cause of such phenomena is undoubtedly the vast number of icy and burning mountains, which produce all sorts of meteors. Thunder is rarely heard in the district of Mule, which is contained in this quarter of Iceland: and hence the annals describe with much propriety as an extraordinary event, the misfortune that occurred in 1690; when a house was destroyed, a woman wounded, and a cow killed, by lightning in the canton of Ostfiord.

The inhabitants of this quarter of Iceland possess no peculiar characteristic to distinguish them from those of the districts already mentioned: though the latter look upon them as a distinct people, in consequence of their living insulated, as it were, from the other quarters; so that, having little occasion to communicate with their countrymen in general, they have a manner of behaving and reasoning peculiar to themselves. They are mostly peaceable, sentimental, and reserved; and though they do not differ essentially from the other inhabitants, yet their dialect, costume, mode of travelling, &c. are sufficient to make them appear to people of other districts as a distinct race.

OF STREAMS CHANGED INTO GREAT RIVERS.

The inhabitants assert that some streams have been extraordinarily augmented by the eruptions of the volcano; but as those often change their beds, it is not easy to determine how much they may have increased. With respect to rivers whose increase is continual, we have two examples. The first is that of Jukulsaa, on the sands of Solheime, which is called the Stinking River: it was formerly a small stream; but received a vast increase from the fermentation and the eruption of the glacier,

which inundated the plain, and carrying off all the grass, transformed it into a desert. This devastation took place about the year 900, and the Landnama-saga speaks of it as a supernatural event: since that time the river has become large and deep enough to convey the masses of ice from the glacier; and it is now one of the principal rivers of the country.

FURTHER REMARKS ON BLOOD IN THE SEA.

In 1608, but at what period of the year is not mentioned, the fishermen on the eastern coast perceived blood coagulated in the sea, which was driven by the tide in oblong heaps upon the shore. We mention this circumstance that it may be compared with the detail we have already given. It is likewise certain, that when whales meet and fight in the sea, and particularly when they are pursued by hundreds of harpooners, the sea becomes tinged with red to the extent of several leagues round; hence this may be a natural cause of the phenomenon alluded to.

SOUTHERN QUARTER.

Our travellers inform us that during the time they travelled, they made the isle of Videy, in this quarter, their habitual winter residence.

JOURNEY TO MOUNT HECLA.

M. E. Olafsen, who published at Copenhagen a dissertation on the natural state of Iceland, embarked from the above-mentioned isle, in a merchant ship which was proceeding to the isles of Vestmannoer; where, in company with M. Povelsen, he undertook a journey to mount Hecla.

This mountain, which is better known to strangers than any other, is one of the inferior elevations of Iceland. The annals call it by its proper name, which is Heklufiall; from which foreigners, and particularly the Germans, have formed their Heckenfeld. It is not a promontory, nor is it situated on the sea shore, as it has been represented in a number of charts. It lies to the west of the glacier of Tinfiallojœckel: and now beyond the canton of Rangaarvalle, though it was formerly within this canton; but its numerous eruptions have so ravaged the surrounding country, that the people have withdrawn from it.

On arriving at a habitation called Selsund, near mount Hecla, the owner wished to become our guide. He was well acquainted with the country around this mountain, though he had never travelled farther than its base; for the people consider it as an act of rashness to attempt to examine the mountain, and they assured us that it would be impossible to ascend it on account of great numbers of dangerous bogs, which they asserted were always

burning with sulphuric fire and exhaling smoke; while the summit, according to them, was covered with boiling springs, and large craters which continually propelled smoke and fire. They told us that Hecla was provided with a guard of black and singular birds of the conformation of the raven, armed with beaks of iron, with which they gave a very unpleasant reception to those who had the temerity to climb the mountain. This story is one remnant of the popular prejudices that have been formed with regard to this mountain. Our guide, nevertheless, assured us that he never perceived either the birds, the fire, or the smoke.

We had an opportunity during our journey to mount Hecla, to contemplate its environs, which on the south and west sides afford the most afflicting specimens of frequent eruptions. The finest part of the territory in question is covered by torrents of melted stone, sand, ashes, and other volcanic matter. Between the sinuosities of the lava we observed, in different parts, some portions of meadows, walls, and broken hedges; and our guide informed us that on the east and north sides the devastation was still greater, and afforded dreadful traces of the ruin of the country and its habitations.

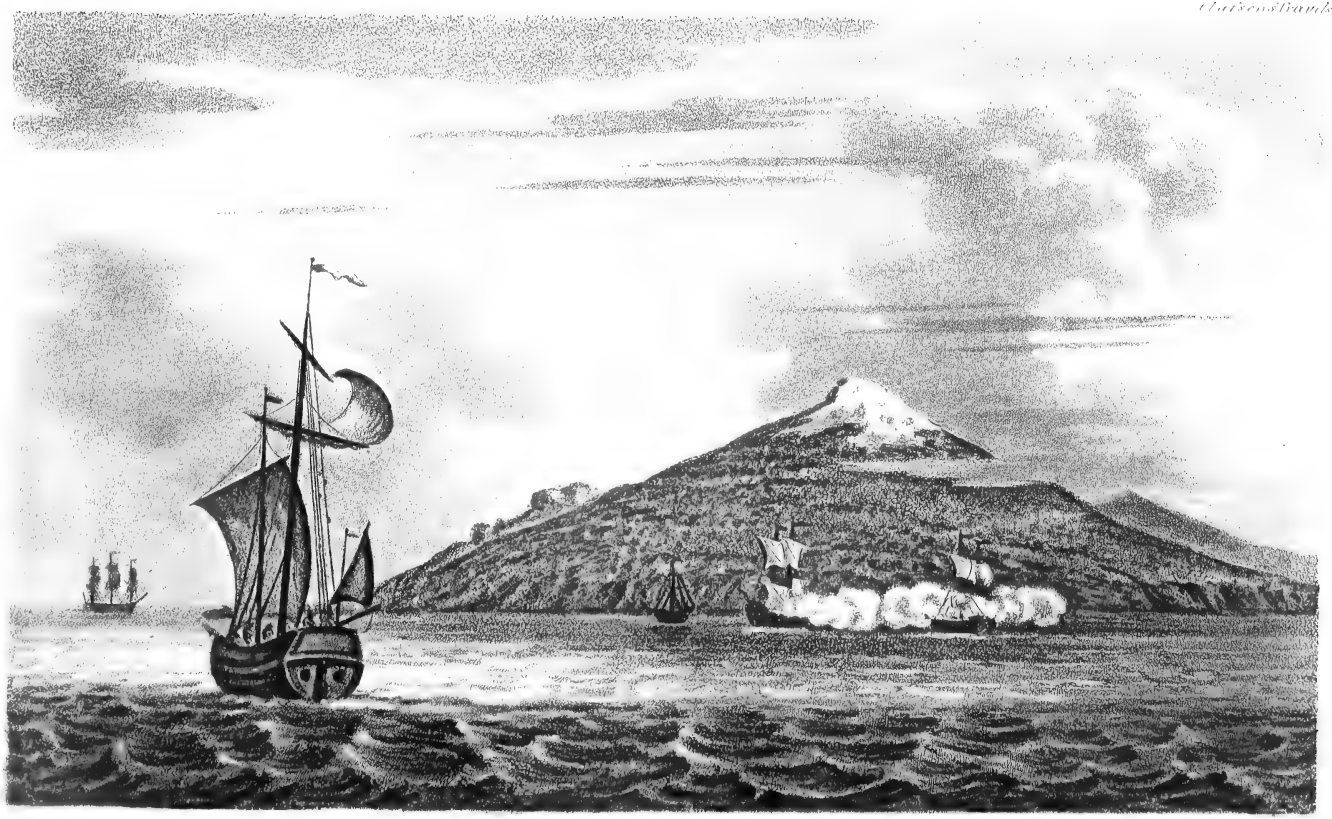
There are neither grass nor plants to be met with to the extent of two leagues round mount Hecla, in consequence of the soil being covered with stones and lava; and in some parts where the subterraneous fire has broken out afresh, or where the matter which was not entirely consumed has become ignited again, the fire has contributed to form small red and black hillocks and eminences from scoriæ, pumice-stone, and ashes. The nearer we approach towards the mountain, the larger are these hillocks; and there are some of them the summit of which is a round valley, whence the subterraneous fire ejects the matter just mentioned.

As we approach towards mount Hecla, the ground becomes almost impassable, particularly near the higher branches of lava which have been thrown from the volcano. Round the latter is a mountain of lava, consisting of large melted flag-stones, which are from forty to seventy feet high, and in the form of a rampart or wall. We were here obliged to leave our horses: and even our guide begged to be excused from attending us any farther, under the pretence that he had a violent head-ach; but the real reason we suspected rather to proceed from the operation of his prejudices with respect to this terrific volcano. The flag-stones alluded to were detached, and mostly covered with moss; while between them were very deep holes, which prevented us from advancing without the greatest circumspection. We ascended on the western side. The rocks appeared very strange to us, for

they cracked continually under our feet, which at first gave us much uneasiness; but on investigation we observed that the rock itself had been consumed and was reduced to pumice stone, which was disposed in thin horizontal layers, fractured in every direction. From this circumstance an idea may be formed of the intensity of the fire which could thus consume a whole mountain: for if Hecla were for a few times to take fire again, all the rocks that compose it would fall into ashes.

We continued to ascend without meeting any obstacles that impeded our attempts, by small slopes which we found at intervals, of which we passed seven before reaching the summit. We found in the breaches and fissures, which were very numerous, a quantity of white, black, and red, polishing-stones (*Schwarstein*), the first of which was uncommonly fine and light. This circumstance tends to support the account of mount Hecla having vomited water, though in a far less quantity than the devastating torrents of Katlegiaa. Here has also been found after the different eruptions of mount Hecla, a great quantity of salt, sufficient to load a number of horses, which in no small degree tends to confirm the opinion of the connection between volcanoes and the sea. Such a communication may reasonably be presumed, particularly with respect to the volcanoes and glaciers of the eastern parts of Iceland, on account of the great extent of their bases: in fact, these mountains vomit a much greater quantity of water than the solution of the ice would afford; and it has even been observed, that these waters possess a brackish taste. With respect to mount Hecla, it may as an objection to this theory be observed, that a vast quantity of rock salt may be contained within it; but its bowels undoubtedly extend to a level with the sea. Besides, independently of the opinion so generally received by learned men of all countries, that there is a secret connection between this mountain and Etna in Sicily, since the two volcanoes have so often been observed to burn at the same time, a number of curious examples are known which prove the sympathy between Hecla at the time of its eruptions, and the other volcanoes in Iceland more distant from it than it is itself from the sea.

It was on the night of the 19th June that we ascended the mountain. The weather was serene and calm, but when we had attained a certain height we began to feel cold: the surface was covered with ice and snow; not however of the nature of those of the glaciers, because here the ice melts in summer, except such as remains in the deep fissures and holes. On reaching the ice we found it covered with snow that had lately fallen, which we ascertained to be deeper and deeper in proportion as we ascended: at the summit of the crater it was a foot and a



Mount Hecla.

half. The whole of this, as well as the preceding day, the air had been clear in the canton beneath the volcano; but like the other mountains, it attracts the clouds that envelope its summit, without their being perceived by the inhabitants. It is worthy of remark, that the snow had fallen only on that part of the mountain which was covered with ice, and not below; so that it may be concluded that the ice which is on the mountains in summer is the measure or degree of elevation, or that region of the air, where the thick clouds and vapours can collect and float in the atmosphere though the air may be pure and serene in the lower regions: hence at this height the air possesses a certain density. In other respects Hecla is only a small mountain, compared with the high glaciers and mountainous chains of the interior parts of Iceland. Its circumference is from three to four leagues; and its height by approximation to that of the other mountains which have been measured, is about three thousand feet above the plain of sand that is below the rampart of lava. Its elevation above the sea is yet unknown.

After a fatiguing journey, up to our knees in snow, we at midnight reached the summit of mount Hecla. A perfect silence prevailed; and we could perceive nothing but ice, and neither fissures, streams of water, boiling springs, smoke, nor fire. It was as light as at noon-day, so that we had a view of an immense extent. We looked over all the glaciers in the eastern part; and in the distance we saw a high and square mountain which our guide had previously informed us was the ancient volcano of Hærdabreid, which appeared to us like a large castle. We also discovered all the high mountains in the northern quarter.

Not meeting with any thing remarkable on this mountain, we descended by the western side, along a ravine or deep valley, which runs from the summit to the base. There is some reason to believe that this ravine is the bed of a river of lava which the volcano ejected in the year 1300; since the annals assert that, during this eruption Hecla was split from top to bottom: and though the cavity in question now bears the appearance of a deep valley, it is certain that when formed, it was laid open to the bowels of the mountains; but when the eruption ceased, it was soon filled with the stones, rocks, and gravel, that fell into it. At length we rejoined our guide at the bottom of the hill, and found that he had got rid of his head-ach: he expressed his surprise at seeing us return safe.

ERUPTIONS OF MOUNT HECLA.

From every probability, this mountain must have been subject to eruptions long before Iceland had any inhabitants. One of the annals states the first eruption, after it was peopled, to have

occurred in the year 1004; and another chronicle asserts that the one of 1029 was the third. But in general the histories of the country do not agree on this point: for from certain annals which speak only of great eruptions, mount Hecla appears to have undergone no more than twelve; while others contend that sixteen have taken place. We, however, after attentive reading and careful research, ascertained that it has experienced twenty-two eruptions, without reckoning those the periods of which are uncertain, though many take them into the account; because the same eruption has sometimes lasted upwards of a year, or one has commenced in winter and continued till the succeeding spring. Most of the annals of Iceland agree in stating that the first known eruption from mount Hecla took place between the years 1004 and 1106; while the last overflow of its crater was in the year 1693. A fire broke out among the surrounding lava in the year 1728.

In 1554 there were remarked several violent eruptions from the mountains contiguous to Hecla on the northern side, and the fire appeared for the last time in 1754 in the lava to the west of this volcano: the fire in question lasted three days.

The intervals between the eruptions of Hecla are very unequal: for from two to five and ten years sometimes scarcely pass in tranquillity, while at others from fifty to sixty years occur between two eruptions; and in 1765 upwards of seventy years had elapsed since the last fermentation, on which account the inhabitants were daily expecting an eruption more violent than ever.

In 1766 their fears were realised: for on the 5th of April an approaching eruption was announced by earthquakes, and it began by an exhalation of smoke and flame; while pebbles and large stones were propelled to a prodigious distance. The fermentation re-commenced in 1767; and in 1768 flames still continued to rise at night from the crater.

M. Biarne Povelsen visited mount Hecla in 1762, to collect volcanic or volcanised substances; but a fog which came on, prevented him from ascending. He only met with a variation of the common melted stone marked with ligneous fibres: it resembled jasper, was of a red colour, and on breaking exhibited yellowish veins; the filaments were black. This specimen was evidently ferruginous. We have spoken of the fossil-wood called Surturbrand, which has been petrified after being turned into charcoal. In 1750, M. E. Olafsen found a specimen of it in the mountain of Draapehlid; and these two species of stones exhibit a singular proof of the metamorphoses that are affected by volcanoes.

OF THE GEYSER.

The Geyser is a boiling spring in the southern district, which

is well deserving of notice. At the time when we arrived at it the water was at a considerable height in its bason, and overflowed it in every direction. Soon afterwards were heard a subterraneous rumbling and gentle detonations. This was the signal for the propulsion of the water, which began instantly to rise; but at the period in question it did not attain more than sixty feet. The *jet* suddenly ceased, and began again at intervals of some minutes. The violence of the spurting diminished by gradations, till the bason became entirely empty. Our guide told us that it was usual to see the Geyser flow with such feebleness and irregularity. The bason was for an instant without any water; but the vapours which arose from the crater prevented us from seeing the bottom. We measured its depth with a plum-line, and found it to be seventy-two feet: while the diameter of its orifice was about fifty-seven; and that of the bottom, or very little above it, eighteen feet. The bason, by contracting, terminates like a funnel: we therefore again dropped our line, in the hope that the lead would find some apertures through which the water issues; but no sooner had the ball touched the bottom, than a boiling *jet d'eau* was propelled over the rock, though fortunately it did not fall upon us. Not willing to be deterred from our purpose by such an interruption, we again attempted to sound the bason, when another gush obliged us to make a precipitate retreat. The air and manner of our guide on this occasion evidently testified that he was alarmed at what had happened; and that he thought, like most of the common people, that it was not permitted to man to examine such mysterious places, because the powerful spirits who reside in them always punish those who attempt to dive into their secrets. We frequently, but in vain, renewed our attempts to sound this crater, in order to ascertain what holes were at the bottom: but either our ball was too large, it being about two-thirds of an inch in diameter; or the apertures were sinuous like those of the Hverevalle, which prevented us from gaining our point.

After the propulsions already mentioned, the Geyser remained tranquil during the night, the water rose slowly, and the bason was not full till four o'clock in the morning. We remained in the vicinity, that we might not fail to observe the spouting of the water; and in order to ascertain its force, threw into the bason some pebbles and thermal concretions which we found about it. At length the issue of the water was announced by a rumbling noise under our feet, similar to the firing of cannon at a distance. Five reports of this kind succeeded each other, each of which was louder than the preceding, or as if the cannon was approaching towards us; we felt at the same time the ground shake under us as if it was about to split or burst.

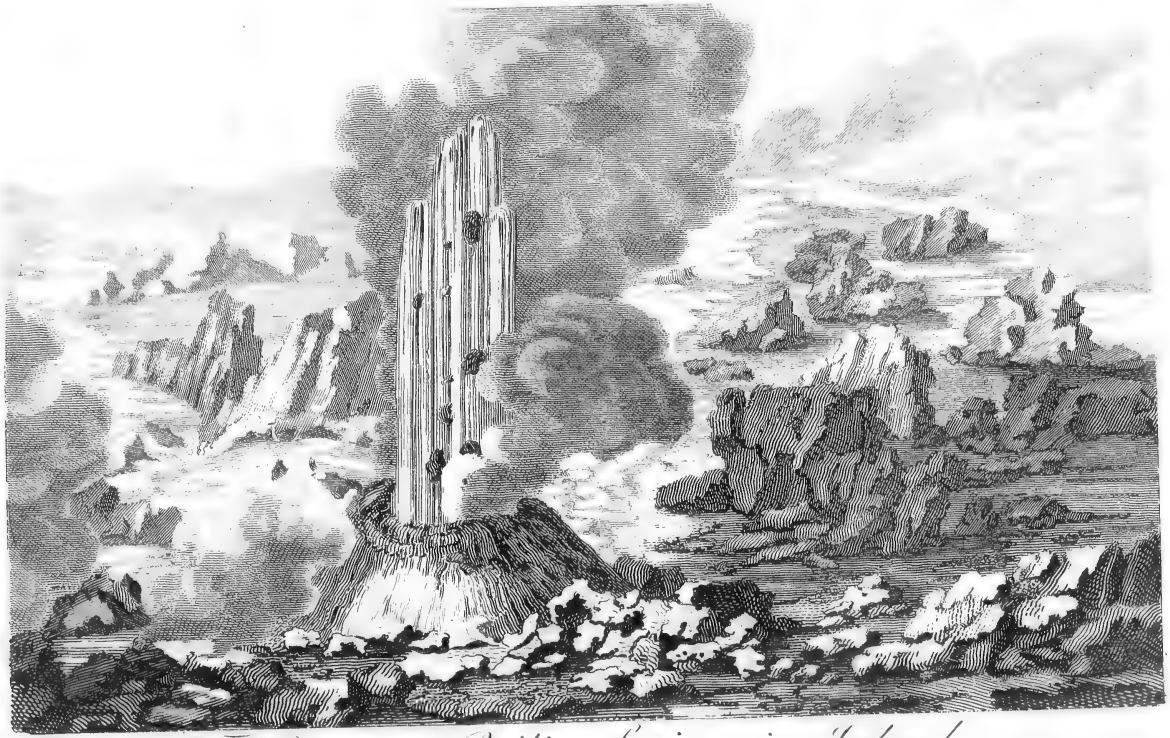
On the sixth report, the first propulsion took place, and the water rose to a great height; after which every successive report was the signal for a new ascent, each of which carried the water higher than that which had previously taken place. The pebbles and stones we had thrown into the bason were split in a thousand pieces, and thrown up much higher than the columns of water, which always terminated in a point. We took the precaution to place ourselves to windward, that we might not be incommoded by the thick smoke which had prevented us from seeing the opposite side. From the very beginning we had observed, that at each propulsion the water which was in the bason was agitated, and raised so as to overflow the crater in every part; but particularly on the northern side, where it fell into a small valley and formed a rivulet, in which the water at a great distance from the Geyser still retained such a degree of heat that the feet of the cattle which passed it were often scalded.

The spouting of the Geyser was this time greater and more violent. According to our observation, the greatest rise of the water was not quite so high as the mountain or Laugafell which is opposite to the Geyser, and whose elevation may be about seventy fathoms; we estimated the height of the spouting water at sixty. The inhabitants of the neighbourhood, however, who daily see the Geyser, pretend that the water has often spouted as high as the summit of the mountain in question, and when this occurs they expect rainy and stormy weather. The propulsions lasted, in all, ten minutes; and an interval of about three seconds occurred between each subterraneous detonation which announced the ascent of the water. In consequence, there were at this time about two hundred jets altogether.

OF THE NATURE AND QUALITY OF THE GEYSER.

Nothing is known with certainty relative to the sources of the Geyser; it not having been ascertained, whether the water that is propelled from it proceeds from the neighbouring mountains, or from the sea. The former opinion is the oldest, and perhaps the most reasonable. In the Danish Mercury for 1754, are some details relative to this spring, in which it is stated that the variations in the issuing of the water have no fixed period. The rock from which it proceeds has increased in the course of time, by an accumulation of the thermal turf which we have already described, which in its colour appears at first sight like the crust that is found at the bottom of boilers: that of the Geyser is very hard and uneven, and is dispersed in thin layers one above the other; and the whole rock is formed of this substance.

The boiling water of the Geyser has a petrifying quality, as we had opportunities of ascertaining. The pebbles and ther-



The Geyser, or Boiling Spring, in Iceland.

mal concretions which we found at the bottom of the crater, were covered with the stalks of plants and small branches of birch, completely transformed into a hard stone of a pale colour. We found in the rock itself the stalks of petrified plants; besides different kinds of wood, sheep-bones, and even horse-dung, petrified. Among the rest was a stone bearing the impression of small birch-leaves, in which we could distinctly perceive the filaments: the leaves were white, and composed of a kind of thermal turf; but the stone itself was evidently transformed into scoriæ of earth. We no where met with a similar metamorphosis.

There are several other hot springs near the Geyser. What has been said in the Danish Mercury relative to the ocular demonstration of various persons, who have often seen flames issuing with the water of the Geyser, is by no means contrary to experience. The edges of the craters of several of the hot-springs are covered with a crust of this white matter; which resembles porcelain, and is no where to be found except at Hverevalle.

In these parts are several pits of boiling clay; and other fine fat earths of various colours, similar to what is found contiguous to the sulphur-pits. Of the boiling springs lately mentioned, one in the canton of Hreppar called Grafarhver is worthy of notice, because the people assert that birds are often seen to swim in the boiling water: which, if true, is a secret of nature that cannot be accounted for; but the inhabitants do not agree in their account of the size of these birds. Some say that they are as big as ravens, and others that they resemble ducks or plovers: they are seldom seen more than two together; and a difference of opinion prevails about their colour, though it is agreed that they are dark.

In the canton of Olves there are also a number of hot-springs, one of which likewise bears the name of Geyser, which word implies *violent:* it is inferior to the Geyser already described, but its process is much the same.—Near the last-mentioned Geyser is a *dry spring* called Seyder. Its tunnel does not contain any water, but a thick smoke issues from it; the heat of which is so great, that the inhabitants can easily cook in it their milk, fish, and meat. They assured us that their victuals are dressed by it as quickly as in the water of the boiling springs; and that they receive no peculiar taste or smell from the smoke, which itself has so sulphuric odour, though some vapour issues with the smoke: it is the latter probably which penetrates the vessels, and causes ebullition.

We ascertained that the degree of heat in all the hot springs is nearly the same, as is the weight of the water. Fahrenheit's thermometer generally rose in it to 182°; and out of the water,

in the smoke or steam near the surface, to 90°: the heat is consequently rather greater in the springs of Olves than in those of Reykholtz.

With respect to what we lately observed about the plunging of birds in the hot water, we have ancient authority for the relation. Halfdan Jonsen affirms the same thing, and asserts that many respectable persons of his time had attentively noticed the swimming of the birds in the springs of Olves. We were told as a fact, that these birds not merely swim, but dive beneath the boiling water; and that when a man approaches, they remain a long time under it, and sometimes never rise again. They are, however, not often seen; for three or four months sometimes elapse between the periods of their appearance, and there are only a few select springs to which they repair in winter. We dare not give the lie to the assertions and attestations of persons of credit; but if we consider these birds to be natural, how many objections may we not oppose to the relation! Their plumage, beaks, and legs, if defended by a callous skin, might possibly resist the boiling water while swimming; but when they dive what becomes of their eyes? Perhaps these organs are of a particular nature, and we may be told that the salamander has eyes, but we now know that that animal does not live in fire, as was formerly supposed; it only passes rapidly round, and goes through a short portion of this element. We must also ask, of what nature is the blood of these birds. We know that that of birds in general is light, and on this account sea-birds cannot dive. To this it may be answered, that the thermal water is much lighter than any other, and that ducks are in general heavy. The excessive heat however of these springs is such, that no ordinary bird could immerse itself in them without instant destruction. We therefore think, that if the birds in question do exist, they must be amphibious, and in this case would afford a great and interesting novelty for naturalists.

OF THE AURORA BOREALIS.

This meteor is frequently seen in Iceland from the decline of day till midnight; at which hour it generally disappears, and does not occur again during the night, though the atmosphere be serene. This event, however, takes place only in dark nights; for when the moon is full, or nearly so, the aurora borealis is scarcely ever seen: yet it sometimes happens, that when the moon appears in all its splendour, the aurora borealis rises in the distant horizon, approaching towards the lamp of night, and as it advances it loses all its brilliancy. On the 18th November, 1753, the aurora borealis appeared in the south-east horizon at seven in the evening, and extended at first in a luminous arch

towards the north-west; but suddenly it expanded over the whole sky with an extraordinary brilliancy: it was admirable to see this phenomenon disappear several times in a sort of twinkling, so that there remained only a feeble light at the south-east in the lower part of the horizon. A strong wind had blown all the day; and in the evening the frost had set in so severely, that the sea was frozen between the isles and the coast. On this and eight following days the wind was north-easterly, and often gentle except on the 23d and 24th of November.

On the 18th December 1754, the aurora borealis appeared in the evening after a very stormy day, accompanied with hail, thunder, and dreadful lightning. The storm continued in the evening, and all the night; but between the gusts the sky appeared clear and the moon bright, the winds blowing from the S.S.W. The aurora which then appeared, did not vacillate; it extended from W.N.W. in a number of luminous and narrow streams, at first as far as the zenith, and afterwards descended E.N.E. towards the horizon. The storm and lightning continued the following day: the frost was more intense, but there was no thunder, and the aurora again appeared in the evening.

On the 9th December 1755, the weather was fine with a gentle east wind: it froze at half past nine in the evening, and the moon appeared in the W.S.W.; when the aurora borealis appeared suddenly in the west, and divided into two great arches, which extended over the horizon north and south at no considerable height till they met together. This spectacle continued for about a quarter of an hour; and the streams did not penetrate into the upper region. At ten o'clock there appeared an arch in the east passing the zenith, and proceeding westwardly: it continued to expand till half past eleven, when the upper horizon was covered by it, and threw out a vivid light like flames. The sky could, however, be perceived between these, and the ring still appeared to surround the horizon.—At length, at midnight the aurora entirely disappeared, with the eruption of the ring; which shone about an hour longer, and whose strongest light was on the northern side.

On the 1st October 1756, a gentle wind blew from the N.W. the sky was clear, and the weather was cold, when a thick arch, not particularly luminous, rose from the W. to the zenith, whence it darted in a northern direction a luminous point that formed a rectangle, and which was again subdivided into two other points. This was the only time that we ever saw the aurora borealis exhibit such a singular spectacle. Shortly afterwards the light retired towards the east of the horizon, shining with brilliancy, increasing in size, and rising in undulatory arches which continued to dart more rapidly towards the S. and N. The light

diminished from nine till ten o'clock, and then entirely disappeared.

The southern quarter enjoyed a beautiful spectacle of this kind in 1757. On the 7th February, that and the preceding day having been fine, moderately cold, with wind from the E.S.E. the aurora borealis appeared suddenly at six in the evening in the northern region, scintillating with extraordinary and rapid movements without any certain form. The light augmented and spread, till about half past seven: the atmosphere from S.E. to S.W. appeared like one blaze of fire as far as the zenith, being every where covered with a red or purple flame; while the rest of the heaven was ornamented by the streaks which issued from this mass, and was uncommonly brilliant. This meteor, unlike any thing we had ever seen before, lasted about five minutes.

From the above observations it will be seen how variable the aurora borealis is in Iceland. It is extremely seldom that this phenomenon is observed motionless; or that the horizon is reddened, without sensible vacillations, as is the case in southern Europe. The aurora borealis often exhibits yellow, green, and purple streams, all equally brilliant; sometimes undulating, and at others like the fire of rockets.

We were well aware of the derangement of the needle by the effect of this meteor while it lasted; but we had a compass, which was no tadapted for such observations, so that we could not ascertain to what degree this variation extended.

MISCELLANEOUS OBSERVATIONS ON VARIOUS SUBJECTS.—DISEASES.

The venereal disease first appeared in Iceland in 1753, in the district of Goldbringue. The inhabitants, and particularly the young people, unacquainted with its nature, neglected it; nevertheless it did not commit much havock, nor extend so much as it might be expected. The government afterwards sent a physician to cure the poor gratis: he is annually supplied with medicines, and paid for teaching young men who wish to study physic and surgery.

MANNER OF LIVING AMONG PEOPLE IN EASY CIRCUMSTANCES.

Within the last fifty years, and particularly in this quarter, a vast change has been introduced in the manner of living among the inhabitants. Their food is differently prepared and numerous dishes, as well as foreign liquors, are now in fashion; a variety of delicate eatables, expensive drinks, and groceries of all kinds, being in constant demand. Among these factitious necessaries there are many, of which even the names were unknown about

half a century ago. Poverty has increased with luxury, though the introduction of the latter is considered as a mark of prosperity; but the annual importation and consumption of a great quantity of groceries, wines, and brandy, has not only drained the country, but rendered the inhabitants effeminate and valetudinary, as well as caused a serious change in their morals. At the present time tea and sugar are so common in this quarter, that almost every peasant in decent circumstances is provided with his set of china. Coffee is also much in vogue, but it has not yet extended among the peasantry; other persons, on the contrary, make a daily and expensive consumption of it. These do not consider their food palatable without being seasoned with all the aromatic spices afforded by every quarter of the world: they must have red, and French, and sometimes even more valuable wines, with their dinner; though not many years have elapsed since red wine was unknown in Iceland, while the white kind was used only at solemn festivals or among the first persons in the country.

SINGULAR ACCOUNT OF A SPECIES OF SHARK.

In this quarter of Iceland sharks form a lucrative object for the fishermen, on account of the great quantity of oil obtained from them. There is one species deserving of public notice, the male of which is described by Artedus as follows: *Squalus pinna ani nulla, corpore subrotundo.* We often examined the female, and made a variety of remarks respecting its generation. The vagina is short, but very large, and capable of great extension: the matrix is double, and situated on each side of the rectum: its two uteri are oval, oblong, or resembling a pear; and perfectly separate, except where they meet at the orifice. There is a narrow canal which goes from the bottom of the matrix to the ovarium; it is tolerably large, and situated between the pectoral fins; is regularly rounded, and contains a great number of eggs, the major part of which are about the size of a pea or smaller, while some are as large as a chesnut, and one or two of the biggest are the size of a hen's egg. Two nerves extend from the ovarium to the rectum, and lower orifice of the matrix. We found three eggs at once in one of the vulvæ, and four in the other. The small squali are hatched in the belly of the female; and as soon as they issue from the shell, the egg again closes round the umbilical cord. It retains the placenta uterina; and becomes filled with a thick and whitish matter similar to the first milk of a cow after calving, and of rather an oily nature. Thus the young squali, like many other creatures of the animal kingdom, are nourished through the umbilical cord; and when they have attained their full term, are torn from each of the vaginæ,

and swim round the mother with the egg still attached to them by the umbilical cord. A circumstance still more wonderful is related by the fishermen, and in which they all agreed; that the young squalus frequently enters the dam for the purpose perhaps of repose or nourishment, or to avoid approaching danger. We have, however, always doubted this account; till we had one of these fish in our hands, and examined its internal conformation. The fishermen further assert, that when they take a female of this species, and open it in their boat, their young ones issue out alive: this is natural enough; but that they re-enter the mother when dead, remain in her, and come out occasionally for the purpose of respiration, is a circumstance which we greatly doubt, and have no means of ascertaining its truth.

As the young squalus increases in size, the egg contracts and diminishes in proportion; till at last it drops, and the umbilical cord comes off. Some time before this happens, the little fish has taken food by the mouth, and has acquired sufficient strength to be able to provide for and defend itself; it therefore abandons the mother, as it can no longer find an asylum through her means. We ascertained that this species of fish drops its young in the month of June, singly; some of them which were alive having been brought to us between the 10th and 18th of that month. Nothing, we conceive, is more probable than that all other fish with cartilaginous fins possess nearly the same singular economy in their generation.

While we are on this subject we shall mention another peculiar and interesting circumstance relative to the fish generally called the Buckler, or the *Cyclopterus Linnæi*, Syst. Nat. 132, which is found in abundance along the coast in the district of Goldbringue. The female deposits and fixes her spawn on the rocks along the shore, and sometimes so high that at low water it can in the month of June be reached by the hand. This fish comes to the coast in March, and departs in July. The inhabitants of the western quarter, who apply to the knowledge of fish, assert that the male of this species breathes frequently and gently upon the spawn, as if for the purpose of hatching it. In the year 1755, we ascertained the truth of this account by finding a quantity of spawn with the male near it. It remained motionless, and horizontal in the water, its mouth being turned towards the spawn, from which it was distant about an inch; the mouth was continually in motion, opening and shutting as if spitting something upon the spawn, but these motions were always slow: though the sun shone brightly, we could not discover whether any thing came from the mouth; but it is probable that it communicated some nutritive air or humour to the spawn, near which we did not observe the female ap-

proach. With respect to the birth of the fish of this species, we received from a reputable person in the western quarter an account which states, that at the end of July and beginning of August, he found in the sea in calm weather a quantity of weed drifting in with the current, and thinking he perceived among it some insects in motion, he examined it nearer, and found it to be filled with little cyclopteri, adhering to it by their pectoral fin, which was round, and resembled a buckler or shield. There were several of them which could not find a place, and swam round the weed endeavouring to fix upon it. Their conformation was perfectly distinguishable; though they were only from two to six lines in length, and each of them had its egg attached to the umbilical cord. What was very extraordinary in these young fish was, that some had three eggs, others only two, but very few had one. Our observer did not examine in what manner these eggs were joined together; for it is probable that one or two which were abortive remained attached to the egg which properly belonged to the fish that drew it. These two discoveries in the natural history of the fish in question will probably lead to others that relate to the generation of this class, and their first disclosure from the egg.

EFFECTS OF SUBTERRANEOUS FIRE AT REYKIAVIK.

We must reserve a space for mentioning the subterraneous fires which, since the occupation of Iceland, have appeared in the chain of mountains of Reykianœs, that extends from the heath of Hellisheide to the point of the promontory in the sea. The first eruption took place in the year 1000, in the mountain that stands beyond the canton of Olves; where a river of fire or matter in fusion ran over the high rock called Vatskard, and emptied itself into the canton below. There still remains a striking monument of this eruption in a great extent of scoriæ, which shews the course taken by the fiery matter.

The coast called Vandlose-strand, or the dry coast, every where presents the most frightful appearance of melted and subverted rocks, and alarming clefts and holes in the ground. The point of the promontory of Reykianœs is, however, the particular spot which has always had a passage open to the burning mountains above it. According to bishop Oddsen, there was in 1340 a terrible eruption, which consumed more than one half of the promontory: and the isles and rocks situated beyond this point likewise afford the most striking proofs of the ravages of fire, not only in the soil of the isles, but particularly in the sea near the promontory: for the fire has had its seat here since the most distant ages, and has often burst forth from the bowels of the earth across the sea, the deep and roaring waters of which

have not been able to resist its violence. The Sturlunga Saga, and many other of the Icelandic annals, assert that the fire has broken forth in this spot; and that there have been extraordinary eruptions as often as five times in the thirteenth century, in consequence of which ancient and modern isles have successively appeared and disappeared in a manner as astonishing as dreadful. The fire broke out again in 1422: but on its rage being exhausted, it remained tranquil till 1583; when, according to bishop Oddsen, it was seen for the last time at a great distance in the sea, by the crew of a ship that was passing.

The opinion which we have already hazarded as to the incredible force of the eruptions of the volcanoes in Iceland, receives additional weight and elucidation from what has just been stated; inasmuch as that the sea itself may become the focus of great and terrible eruptions, while it has such a remarkable communication with the mountains on land.

ON THE PESTIFEROUS EFFECTS OF THE AIR.

If the two events which we are about to describe had not recently occurred, and been witnessed by a number of persons, they would not perhaps be credited. Hence the people attribute them to the operation of evil spirits: and for this they cannot be blamed; as the holy scriptures afford them sufficient authority, and they are in want of that knowledge which would enable them to discover the natural causes of such accidents. The first is as follows:

We learnt that three or four persons had dropped dead suddenly on the coast of Vandlos-strand, to the south of Hafnefiord, in the winter of 1753-4; some before, and others after Christmas: but particularly on the estate called Landekot. The soil in this part is open and burnt; and we conjectured that it exhaled some vapours that were more pestilential than ordinary on account of the subterraneous sewers being blocked up by the snow and ice. In the following winter the same accident happened to some others, and in the third year the total number of persons suffocated amounted to nineteen. The inhabitants now became so terrified that they talked of abandoning the canton, which was very populous on account of the abundance of fish. As the persons dropped down while walking through the fields, suddenly gave a shriek and expired, the survivors believed that it was a punishment with which the Almighty had entrusted the evil genii; nevertheless they were persuaded to remain there the fourth winter, though not without being in a panic of terror lest they should be afflicted with sudden death. But in that year no person died in the manner described, nor has any similar example occurred since. We visited the spot in the summer of 1755, and observed that the soil was

every where open. The inhabitants informed us that the neighbourhood was always free from snow, as indeed great tracts of lava generally are; but they asserted that the sudden deaths occurred whether snow and ice were on the ground or not. They added two other circumstances: first, that the accidents in question always happened during the winter solstice when the days were short and dark, but always in the day time; and secondly, that those who died in this manner were almost all related to the same family, the principal part of the number being formed by four brothers and their children. As two of the brothers were walking together one of them dropped dead, while the other did not experience the least disagreeable sensation. All, however, who were thus struck were people of regular habits; and it was not perceived that any of them was of a melancholic temperament, or had any complaint that might induce a suspension of vitality.

The other event is no less strange, though of a different nature. In the summer of 1754, on a morning when the weather was serene, though the sky was rather cloudy and a slight wind prevailed, there was seen at Oreback a black cloud coming from the mountains in the north-east, and descending obliquely through the atmosphere towards Oreback. The nearer it approached the smaller it became, and it darted along with the rapidity of a hawk. This cloud, which then appeared round, flew towards a spot where several persons had assembled, as well strangers as natives, for the purposes of commerce; and on passing rapidly before them it touched the jaw of a middle-aged man, which gave him such pain that he instantly became raving mad and threw himself into the sea. Those who were near him ran and prevented him from drowning; but he continued insane, uttered all sorts of extravagant expressions, and made many forcible attempts to free himself from those who held him. They wrapped his head in flannel, and held him down for some time upon the bed; when after two days the madness abated, but he was not restored to his senses till the expiration of a fortnight. Another account of this phenomenon states, that the persons in company with him did not perceive the cloud till it came up with them, but simply heard a hissing in the air while it passed: those, however, who were farther off observed its rapid course, and saw it sink and disappear on the sea-coast.

The cheek of the man who was touched by this cloud was turned of a deep black and blue colour, which gradually disappeared as he recovered. Every one will make his own reflections on these singular events; those who are acquainted with the secret effects of nature, and versed in history, will doubtless find similar examples. In other respects the reader may

compare these incidents with those of a like nature which happened in our own time, and which we lately described.

REMARKABLE PLACES.

From time immemorial the following places have been considered as remarkable:

I. The Althing, or seat of the general court of justice. We have already mentioned Reykiavik as singular for being the first habitation in Iceland: built by Ingolf; who, as well as his successors, there administered justice, and held the althing (or superior general court) at Kialarnes, whence it was afterwards transferred to Thingvalle, where it is still held. The river Oxeraa now divides the Althing into two parts. The spiritual court, which is on the right bank, is held annually in the church of Thingvalle, but only for the bishopric of Skalholt; that of the north is held at Hugimere, in the canton Skagafiordur. On the western bank of the above-mentioned river is the building appropriated to the proceedings of the inferior court, called Lavretten: this building is now of wood, as is that of the superior court which is contiguous to it. The court called Lavretten was formerly held in the open air; but in 1690 a place was erected for it similar to the other buildings of the Althing, that is, the walls were of lava stone, and the roof was of rafters and laths, covered on the outside with their Vadmel or woollen.

II. The bishopric of Skalholt which was established by the first bishop Isler, about the year 1053: this bishop was the son of Gissur, surnamed the *White*, who together with Hialte-Skeggesen did so much, that through their efforts, the Christian religion was authorised by a law, and adopted in the year 1000 at the Althing. It was the king of Norway, Oluf-Tryggveson, who after having taken much trouble to no purpose to cause this new religion to be adopted by the Icelanders, sent off the two persons above mentioned to finish the work, but their attempts had nearly proved abortive; for the eruption took place at that identical time, which produced the lava called Thuraarhraun, and at the very moment when they were harranguing their countrymen, messengers arrived with the melancholy news*: and the Pagans considered the eruption as a token of the anger of the gods, at the blasphemous discourses of the partisans of the new religion. A fortunate circumstance however allayed the

* The Khristni Saga, chap. II. p. 88—90. mentions this circumstance in the following terms: "Ecce autem vir cursu anhelus: ignem subterraneum in Olfus erupisse, et jam villa Thoroddi pontificis imminere nunciat. Tûm ethnici: non miram, si ejusmodi sermonibus excandescerent dii, vociferantur. At Snorrius pontifex: quid igitur uxanduerunt dii, cum scopulus, cui nunc insistimus conflagravit?

rage of the people in this critical moment; for a heathen priest named Snorro-Godi, who probably had formed a good opinion of the new faith, answered their outrageous remarks by the following laconic and ingenious question, "What was the reason of the vengeance of the gods, at those periods when the rocks on which we now stand were in flames? for every one knows that this happened before the country was inhabited." Christianity was then adopted by the people, and fifty years afterwards the son of Gissur the White was created bishop; and Skalholt was made the episcopal residence for the whole of Iceland. The son and successor of the latter, whose name was also Gissur, completed the business, by persuading the Icelanders to enact a law relative to tythes, which continues in force to the present day. He then ceded and separated all the northern part that it might be formed into a second bishopric.

III. The isle Videy contained a very famous monastery till the reformation of Luther, at which period it was secularized: this monastery was founded in 1226 by bishop Magnus Gissersen and his brother Thorvald, and this Thorvald was afterwards canon of the monastery.

IV. Bessastadr, vulgarly called the Royal House, which is now the residence of the baillie, was also known in ancient times, principally because this place was the property of the famous historiographer Snorro-Sturleson, who made it his country seat. Formerly the governors of Iceland resided here when they stopped in the country in the summer: they generally came every year, and returned in their own ships.

VESTIGES OF ANTIQUITY.

We shall mention the following remains of antiquity as worthy of notice.

I. An eminence on an islet situated in the river Oxeraa, belonging to one of the most famous heathen poets of the north, named Thorlev-Jarlaskald. Some remains of this eminence may yet be seen, though the overflowing of the river has from time to time carried off the major part. The history of king Oluf-Tryggveson contains an account of the structure, and of the life of its illustrious owner.

II. The ornaments of the cathedral church are fine and valuable, particularly two antique altar pieces. They still preserve here a bishop's crook, the head of which is brass very finely gilt, and an episcopal bonnet of golden-worked cloth. Here is also to be seen the coffin of Saint Thorlak, who is the same Sanctus Thorlacus mentioned in our almanacks: he was born in the southern quarter; he succeeded to the episcopal chair in 1178; and died in 1193. His translation took place in 1198; and

his history, which is filled with prodigies and miracles, still exists in Iceland. His coffin or sarcophagus which is in the form of a small house, is seven feet long, five high, and three wide: it is covered with black leather, trimmed and embellished with brass ornaments. There is no relic in this sarcophagus except two fragments of bone, which are said to have belonged to the scull of the saint. These bones were held in high estimation; and some annals assert to the credit of Bishop Wilchin, who held this office at the death of the saint, that he caused his skull to be completely covered over with silver, and in the two fragments that remain in the coffin, there may be perceived the marks of small nails as well as pieces of the metal. One is naturally inclined to ask how this could have been done, since the head is not now to be found; but the relics themselves will furnish us with an answer, for they are nothing more than pieces of large cocoa-nut. These nuts were formerly very scarce in the north, and perhaps totally unknown to the mass of the people; and it is certain, that they were not allowed to examine attentively the remains of the saints.

III. A crucifix at Kaldadernœs in the time of the reformation of Luther was greatly honoured and adored throughout the country for the innumerable prodigies which it was said to have effected. It was richly covered and decorated with velvet shoes, pieces of gold and silver, and other ornaments that had been presented to the image. Gissur the first Lutheran bishop caused the image to be taken from the cross, forbade the people to adore it, and despoiled it of its ornaments; but they had it privately replaced: on which bishop Gisle Jonsen hearing of their superstitious proceedings, went in 1587 to Kaldadernœs, caused the image to be taken down a second time, and carried it to Skalholt, where he had it cut to pieces and burnt; but this bishop happening to die soon afterwards, the fanatics attributed his death to the vengeance of the figure. From an ancient poem composed in honour of this image, we learn that it had been brought into Iceland, as was supposed from Rome; and was purchased at the port of Einershavn at Oreback.

OF ANTIQUE ARMS.

They shew at Skalholt an ancient axe or halbert, which belonged to the hero named Skarphedin, who, according to the Nials-Saga, died in 1010. It is much consumed by rust, and the handle which is of pine shod with iron, is six feet and a half long.

At Hlidarende are preserved two sabres and a lance; the former are not remarkable. They are of the same size, and the blades which are very rusty, are three inches broad.—The handle of one of them is nearly a foot long, and ornamented

with brass; while that of the other is covered with skin. Instead of a guard they have a piece of curved iron about an inch in thickness, with two round buttons at the ends. The lance is a strip of pine five feet four inches long, shod with iron. There is also in the same place a vizor much decayed, which is composed of four rings of iron that are groved into each other: its thickness is double round the neck, and it must have been made for a middle-sized man.

OF THE GENERAL COMMERCE OF ICELAND AND PARTICULARLY OF THAT OF THE FIFTEENTH CENTURY.

The ports and harbours of Iceland particularly those of the southern quarter were in former times much frequented by merchants, and first by those from Norway; afterwards by the Germans, and particularly by the Hamburgers, who came in great numbers. The English began to trade there in 1413, though without permission; and they afterwards continued their traffic for a length of time either by permission or secretly; because it often happened that commerce was absolutely forbidden with them on account of the disturbances which they excited in the country; but at that period the trade was of no great extent. John Gerricksen and other Catholic bishops, several of whom came to this part of Iceland in the English vessels, bought merchandizes which they sold to foreigners, and thus created a considerable traffic. A vice-governor having made a fortune in this manner, resigned his functions, and went to live in England, carrying with him great riches in merchandize, silver and jewels.

In this century fishing was carried on to a considerable extent, but the more this increased the more was rural economy neglected. The great plague at length occurred, and agriculture as well as other essential occupations were neglected; because every thing was in confusion, and this confusion for a long time gave rise to various abuses. About the year 1420, the vice-governors began openly to monopolize the commerce by trading with their own ships: the bishops on the other hand as they acquired riches and power, become dissolute and arrogant. An event which happened to bishop Gerricksen is very remarkable in the history of Iceland: his brother having in 1433 asked in marriage a young lady of distinction without being able to obtain her, conceived himself so mortally offended, that in revenge he killed the brother of the lady, and set fire to the house in which she resided, which with the people in it were destroyed, except the lady whose destruction was intended. She had the good luck to escape at an opening in the roof without being perceived by those who surrounded the house. At length being preserved from such imminent danger, and overwhelmed with resentment

towards the monster who had murdered her brother, she made a vow to bestow her hand on whomsoever would avenge her cause upon the bishop, who had been the origin of her misfortunes. A young man named Thorvard, the son of Lopter the rich, of Madrevalle in the canton of Eyafiordur, undertook to do the justice she required. In the following year he made a journey to Skalholt accompanied by some armed men, and arrived on the evening of St. Thorlak's day. As soon as the mass had begun he entered the church, seized the bishop who was at the altar, and conveyed him to the river Brueraa, where a stone being fixed to his neck he was thrown in and drowned. All the servants of the bishop to the number of thirty were massacred in the cathedral. The kings of the house of Aldenburg endeavoured to check these alarming outrages, and Christian I., in particular, forbade under the severest penalties any hostile incursion, attack, homicide or robbery.

In the year 1477, the governor Biorn Thorlevsen was killed near the glacier of Westerjœkkel by some English who came to trade there, because his wife Olor had made her domestics search for and kill all the English they could find in that neighbourhood.

The Governor Didrich Pinning prescribed in 1490 certain rules to be adopted by the German, English, and Icelandic merchants, according to which they were to transact their business. The shocking plague which was four years afterwards communicated to the southern quarter by a foreign vessel made dreadful havock amongst the inhabitants. The Icelanders it appears have always been discontented with the commerce of the English. In 1515 they made vehement complaints to the king; but the English continued to visit Iceland for a long time afterwards.

OF THE REFORMATION.

The Reformation began in the southern quarter, as it was here that the christian religion was accepted at the Althing or general court of justice. We have said that it was bishop Gissur who first organized the bishoprick of Skalholt and its revenues; and it is remarkable, that a bishop of the same name began in 1540 the reformation at Skalholt. He was a good, learned, and affectionate man, but he did not live long; his successor, whose name was Morten Einersen, was affable and possessed much merit. He was the best spiritual poet of his time, as is proved by his canticles for the mass.

The famous bishop Jon Aresen thought to distinguish himself by combating the reformation, though he did not dare to publish his opinion on the subject till the death of bishop Gissur. Aresen was not a man of learning, but was well gifted by nature;

he was of a lively and agreeable disposition and a good poet. In the troubles which he excited, he displayed more courage than judgment, and his vanity and irascible temper caused him to exhibit an inexcusable degree of turbulence. He imagined that his zeal for the faith would protect him; but he was mistaken. The end of this bishop, as well as other remarkable events that arose from the reformation in Iceland, are detailed in a work written on that subject by bishop Harboe.

Oluf Kialtesen was afterwards bishop of Holun: he began the reformation in the northern bishopric, and received the assistance of several distinguished characters, particularly of the governor Paul Stigsen, who enacted many useful laws for extending the religion, and regenerating public instruction to the advantage of the country in general.

Oddur, son of bishop Gottishul of Holun, a pious well-informed man contributed in no small degree to the reformation, by his translation of the New Testament into good Icelandic. Not being upon good terms with bishop Agmund, with whom he came into Iceland, he dared not shew him his translation, or even entrust him with the project; but to Gissur and Gisle, who were afterwards bishops, he communicated his intention, and they assisted him in its execution: it is a fact that under some whimsical influence or pretext, he took up his residence in a cow-stable, in which he translated the gospel of St. Matthew.

Bishop Gudbrand, whom we have before mentioned, rendered the greatest service to his country, by establishing a printing-office, and translating the Bible and other religious books: his whole time, in fact, was employed in this manner. The figures and capital letters in the first edition of the Icelandic Bible are by him; he cut the matrices and cast the types with his own hand.

The bishop of Skalholt Brynjolf Svendsen was the person, who after the reformation, restored order among the ecclesiastics, as well with regard to the administration of justice as to other important objects. He was a very wise and learned man, who was always arduous for the prosperity of his country, and gave incessant proofs of those virtues by his manner of living.

CONCLUSION.

Having now recorded every thing worthy of notice, we shall bring our work to a conclusion. We have omitted a number of excursions and accidents which happened to us during different journies, as well as accounts of such enterprises and experiments as were not attended with success. On the other hand we have inserted whatever we conceived would be useful and important; and we have no doubt that our efforts will meet with the appro-

bation of the judicious and learned reader; but particularly of such of our countrymen as reside in Iceland, or have any connection with that part of the Danish dominions, which has hitherto been so imperfectly known.

The Editor of this work, on concluding his translation of the Travels in Iceland, feels it necessary to offer a few observations: It will be perceived by those who possess the original volumes, or any of the editions which have been published in the different continental languages, that the present translation has undergone a considerable reduction in point of quantity. But it will readily be discovered, that the work of Messrs. Olafsen and Povelsen is so local in its nature, and contains so many uninteresting details, that a literal translation of it in English, would be an ungracious tax upon the purchaser. The Editor has therefore performed the laborious duty of extracting from the original work, all such passages as he trusts will be considered to possess a general interest; of connecting them in such a way that no inconsistency will be apparent, and of excluding a variety of matter, so minute and unimportant, that he is convinced no satisfaction whatever could be derived from its perusal:—the translation however, in its present state, will not only deserve the attention of the general reader, but of the man of science; inasmuch as it contains every incident from which the philosopher or the naturalist can be supposed to derive gratification.

As the authors frequently mention the remarks which they made in different parts of the island upwards of half a century ago, particularly at the time of the eruption of the Katlegiaa, it might be supposed that their travels are of a very old date; the contrary however is the case, for though in their work, they have evidently included the observations which occurred to them at various periods of their lives, yet some of their information is brought down to a very late epoch, and it was not till the year 1802 that their production first obtained publicity.

F. W. B.

THE END.

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